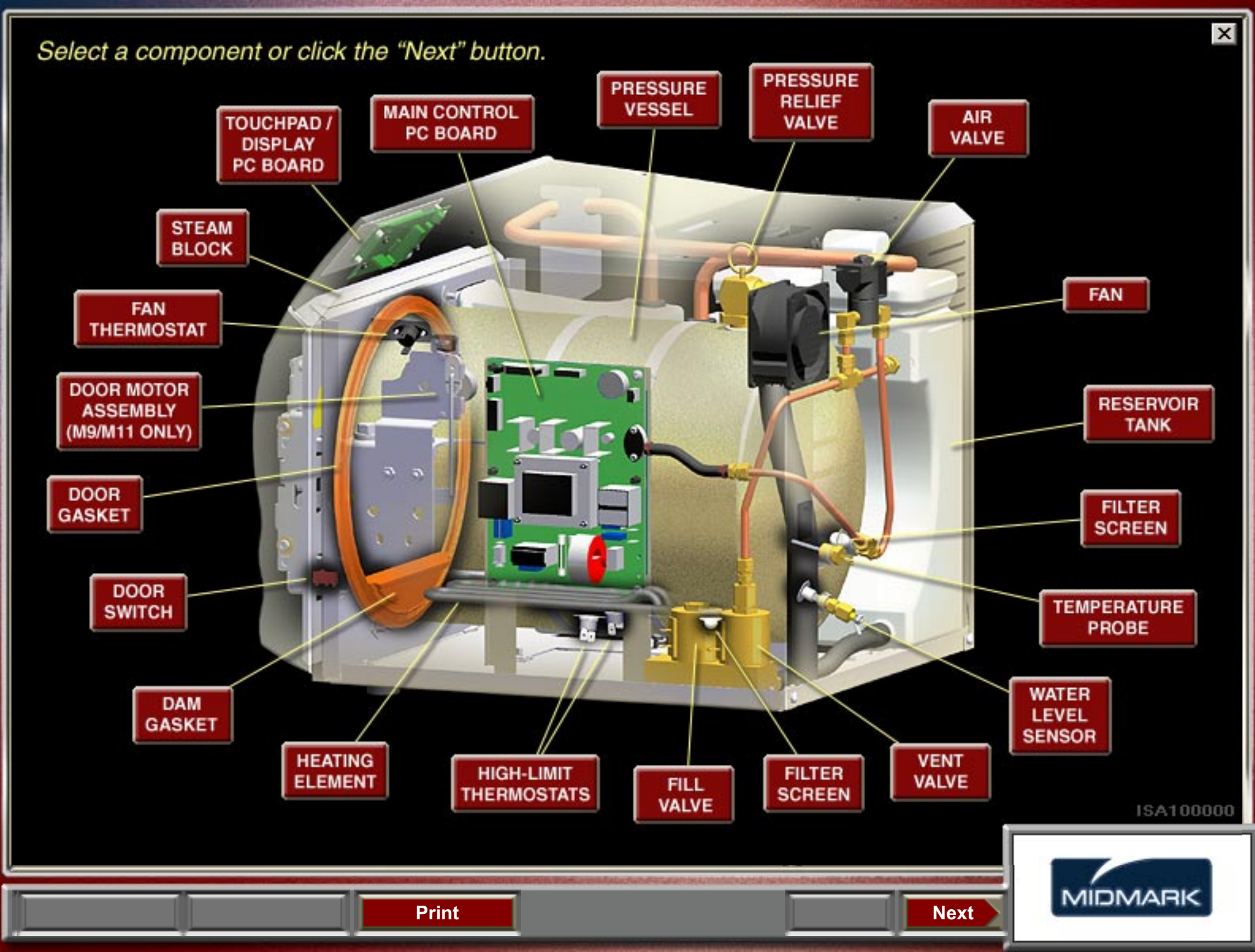
Select a component or click the "Next" button.

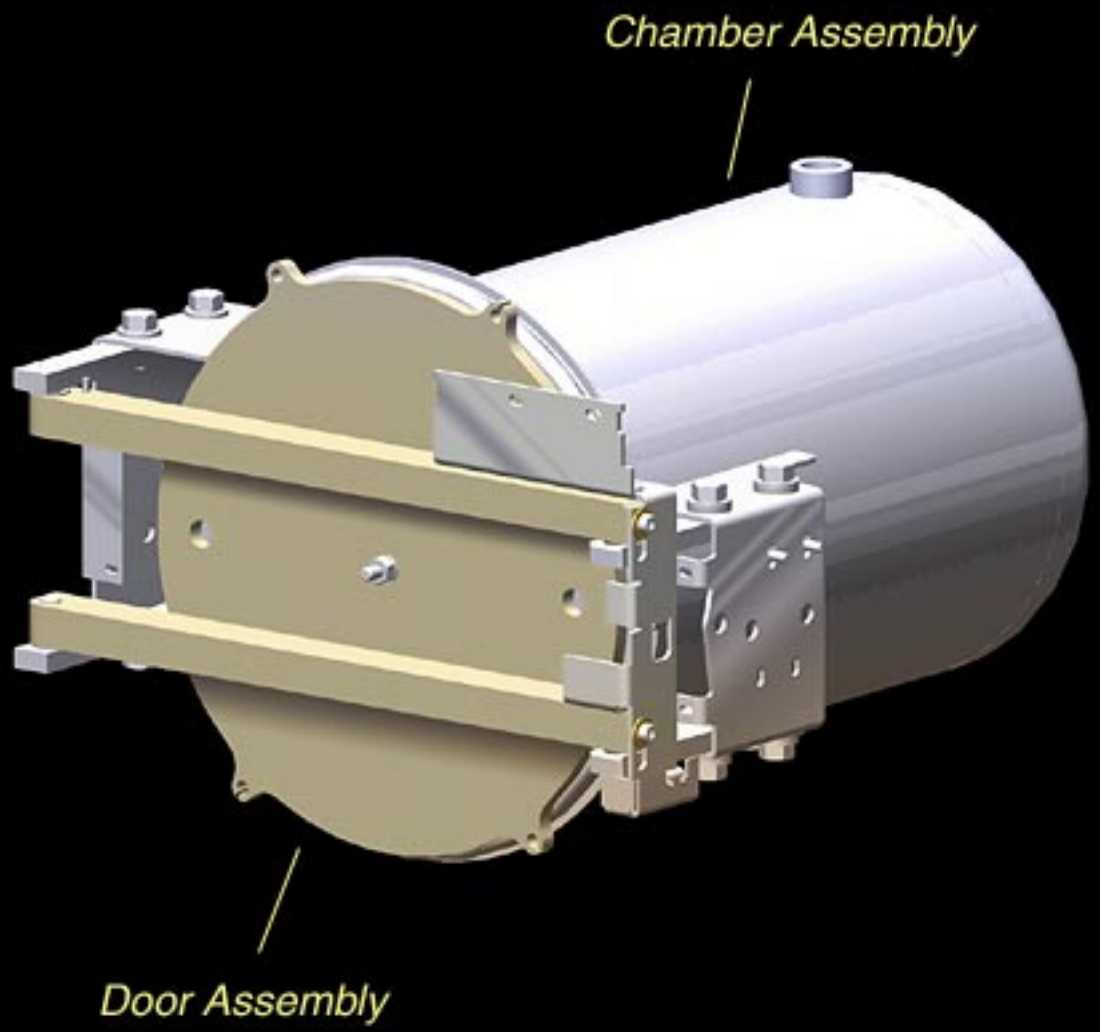


Print

Next

MIDMARK

Pressure Vessel



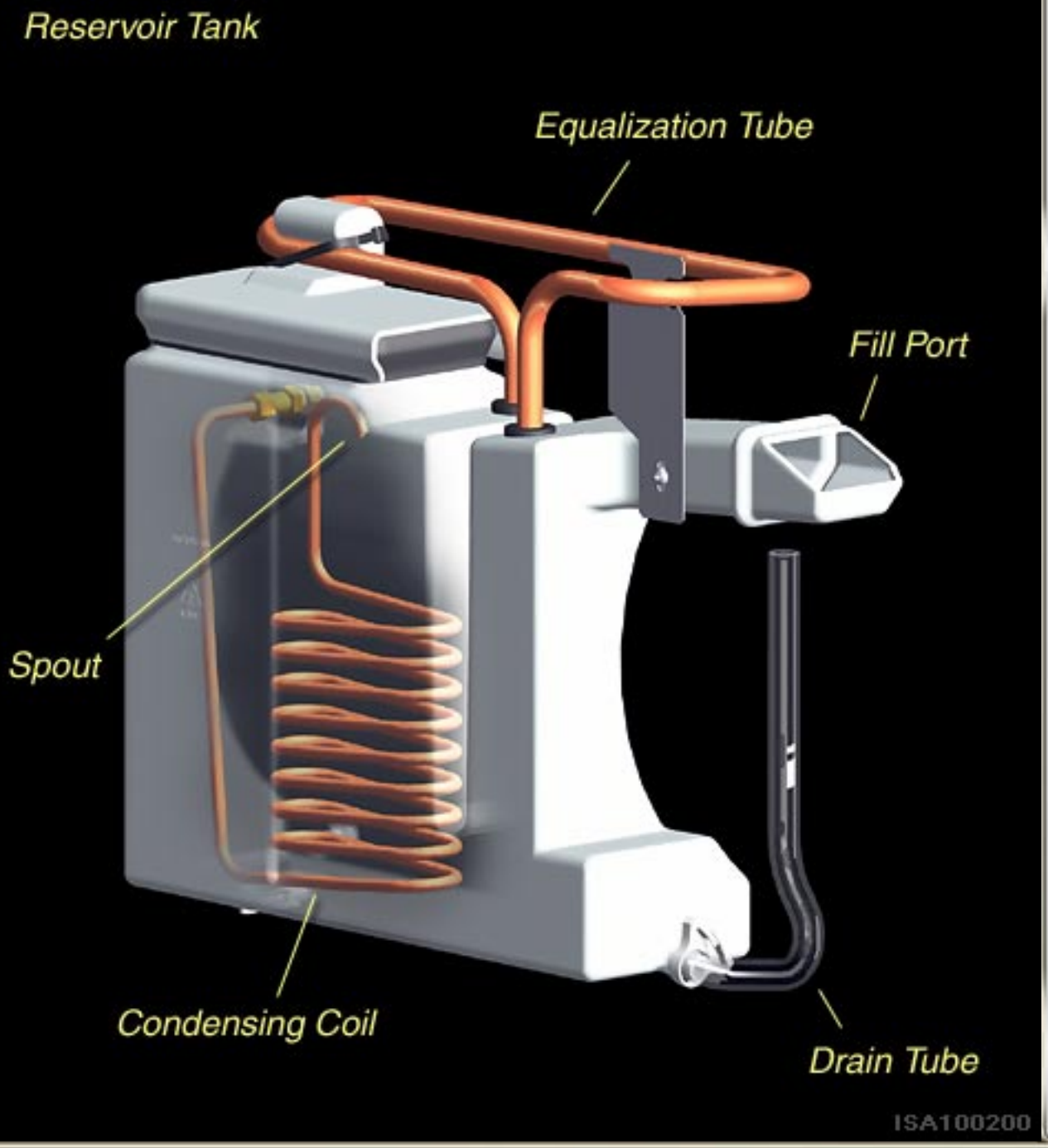
ISA100100

The Pressure Vessel consists of the Chamber and Door Assemblies.

Each Pressure Vessel is hydrostatically tested and certified by ASME.

To maintain the integrity of this testing, the Pressure Vessel should never be serviced in the field.

MIDMARK



The Reservoir Tank stores distilled water which flows into the pressure vessel during the Fill Mode.

During the Vent Mode, steam is released from the pressure vessel through the Condensing Coil. The coil cools the steam and discharges the water back into the Reservoir Tank.

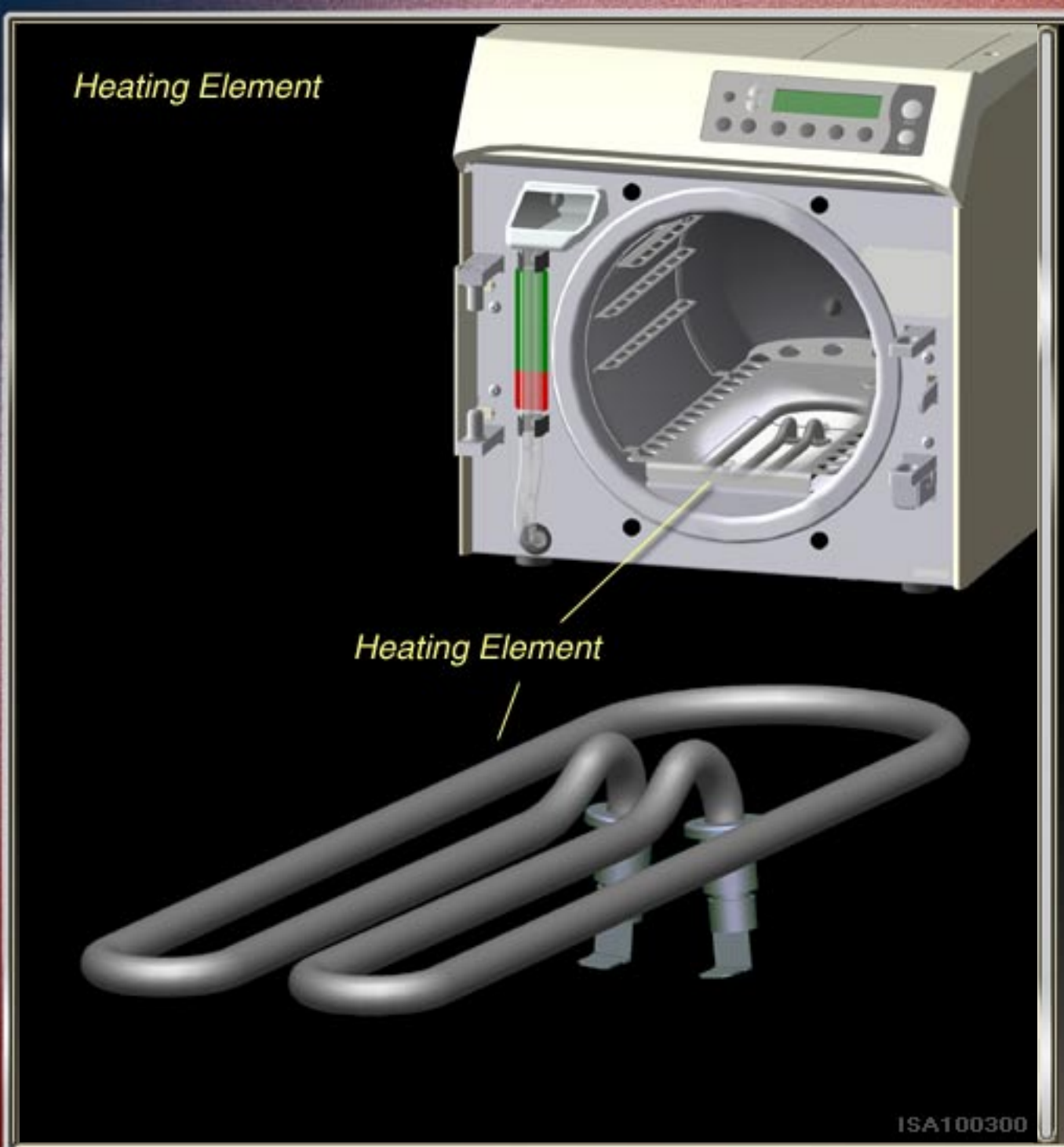
The Equalization Tube prevents water and steam from escaping through the Fill Port during operation.

The transparent Drain Tube allows the user to view the water level in the reservoir, and easily drain water from the unit.

Service Tip

Be sure the Spout of the Condensing Coil is above the water level in the Reservoir. If the water level is too high, errors may occur due to excessive pressure.

MIDMARK



The submersible Heating Element is located inside the pressure vessel, under the tray plate.

During the Heat-Up, Sterilization, and Dry Modes, the PC board turns the Heating Element ON and OFF to reach and maintain proper chamber conditions.

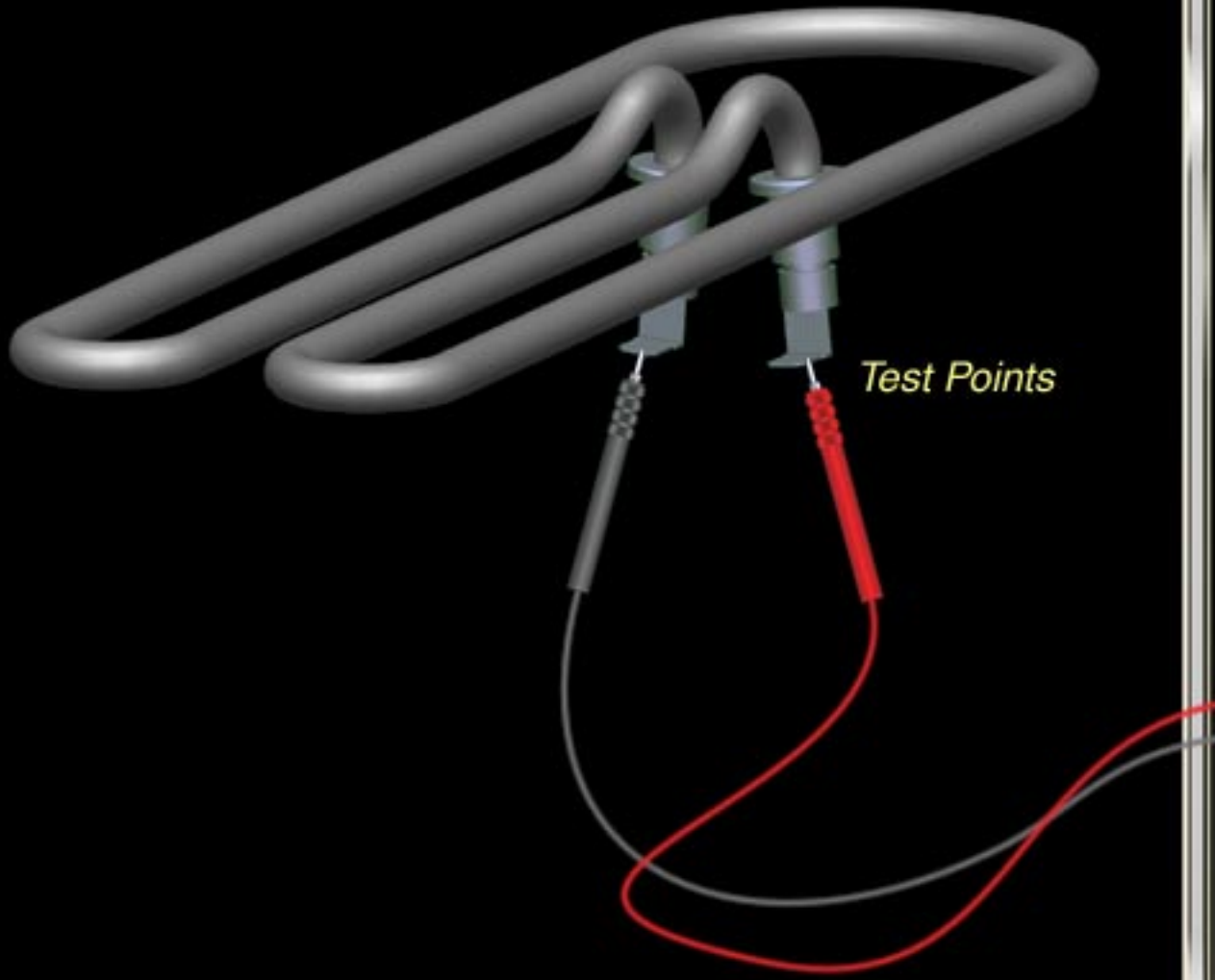
[Click button below for resistance test]

Resistance Test

MIDMARK

Heating Element

Disconnect power to the unit before performing this test.



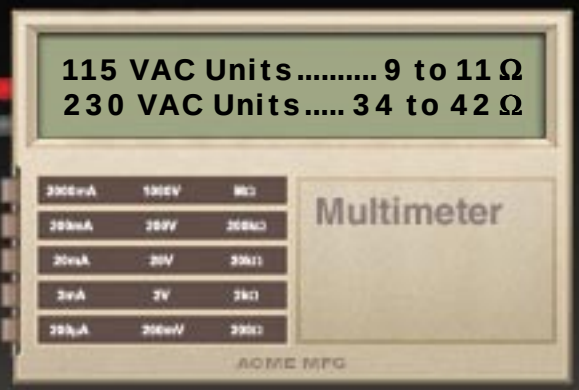
ISA100400

NOTE
The Heating Element must be tested at room temperature.

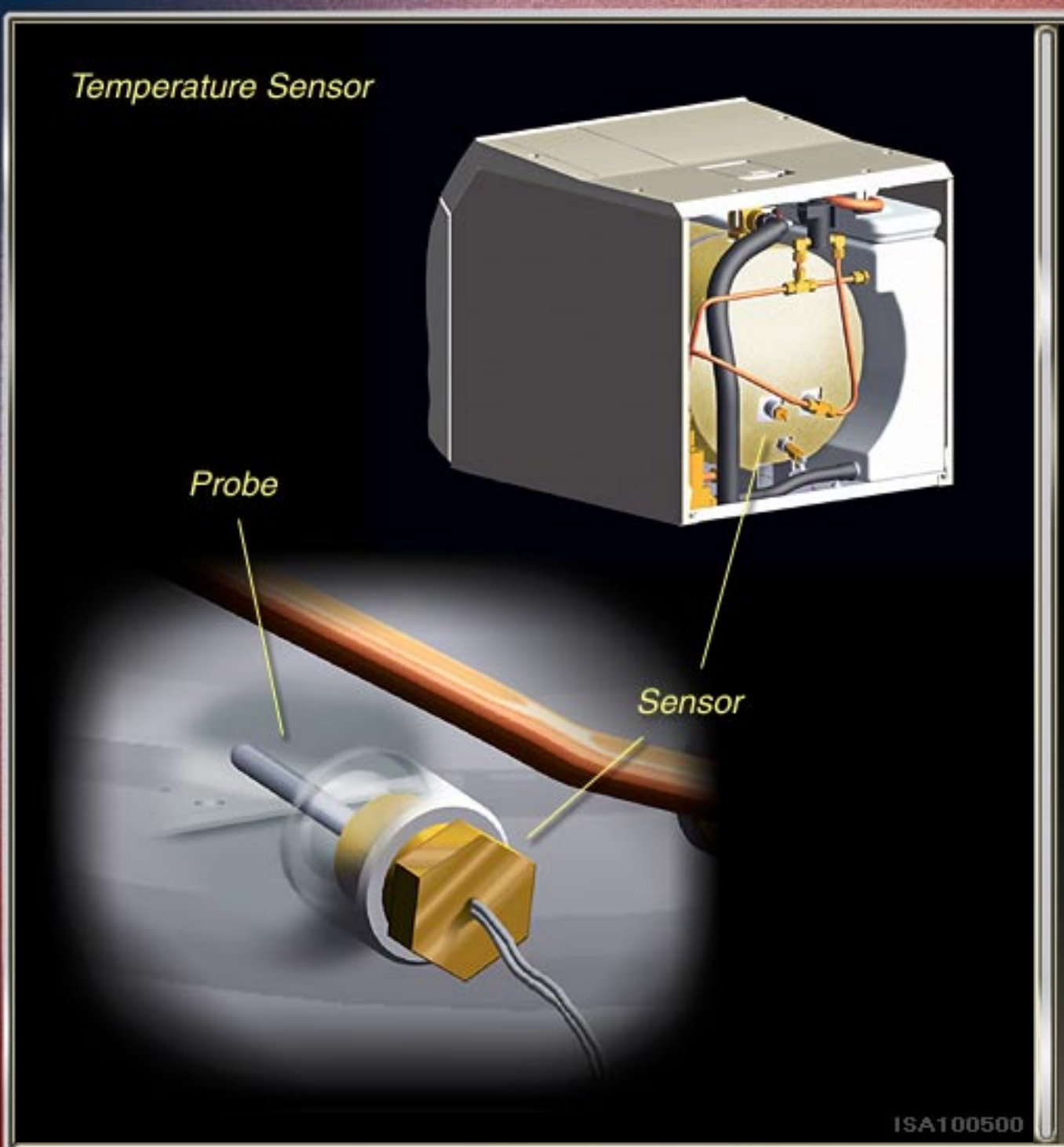
To test the Heating Element...

- **Disconnect two wires from Heating Element Terminals.**
- **Set the multimeter to 200 ohms (Ω)**
- **Place the multimeter probes on the Heating Element terminals.**

Acceptable Range:



MIDMARK



The Temperature Sensor is located in the back of the pressure vessel.

During the Heat-Up and Sterilization Modes, this sensor monitors the chamber temperature and transmits this information to the PC board.

The PC board turns the heating element ON and OFF based on the readings from the Temperature Sensor.

Service Tip

Residue can build-up on the Probe of the sensor causing inaccurate temperature readings. If a temperature related malfunction occurs, clean the Probe with SpeedClean and an abrasive pad.

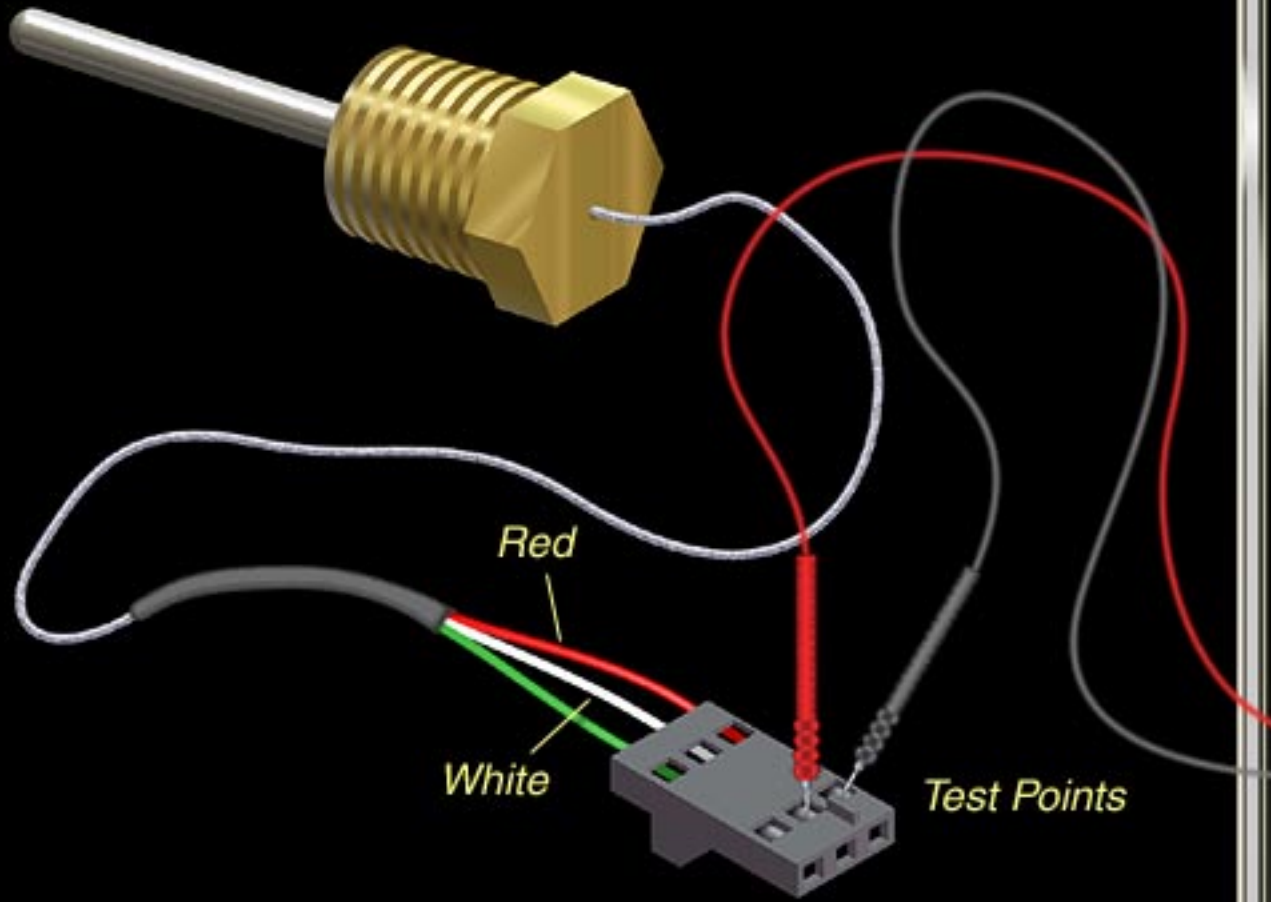
[Click button below for resistance test]

Resistance Test

MIDMARK

Temperature Sensor

Disconnect power to the unit before performing this test.



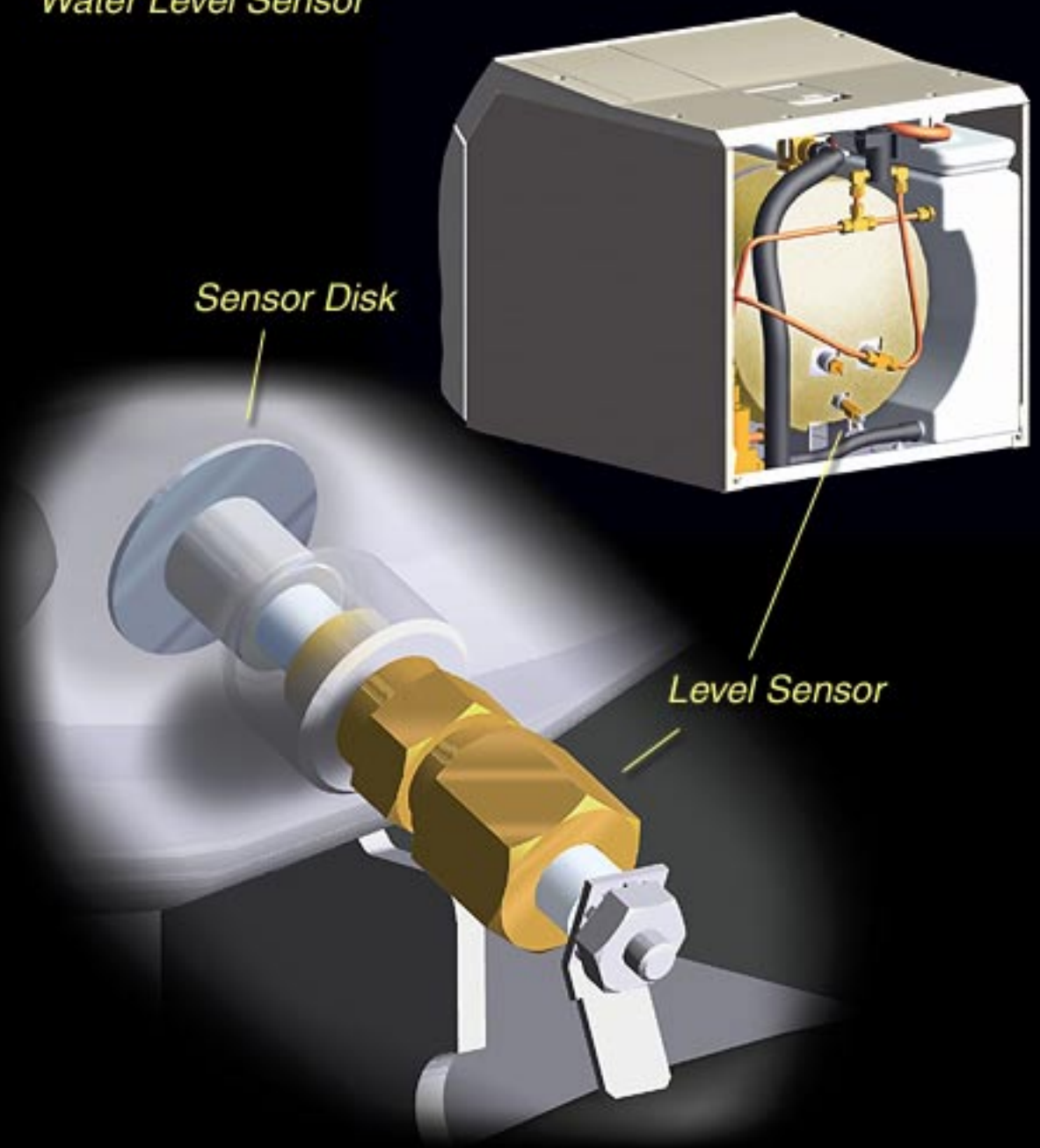
NOTE
The Temperature Sensor must be tested at room temperature.

To test the Temperature Sensor...

- **Disconnect the Temperature Sensor wire harness from the J12 connector on the main PC board.**
- **Set the multimeter to 2k ohms (Ω).**
- **Place the multimeter probes on the red and white wires of the Temperature Sensor wire harness.**

Acceptable Range:

MIDMARK



The Water Level Sensor is located in the back of the pressure vessel.

This sensor monitors the water entering the pressure vessel during the Fill Mode. When the water level reaches the Sensor Disk, a circuit is completed and current flows back to the PC board. When the PC board detects this voltage, the fill valve closes, stopping the flow of water into the pressure vessel .

Service Tip

Residue can build-up on the Sensor Disk, causing malfunctions during the Fill Mode. If the unit does not fill, or fills continuously, clean the Sensor Disk with SpeedClean and an abrasive pad, then dry disk thoroughly.

[Click button below for continuity test]

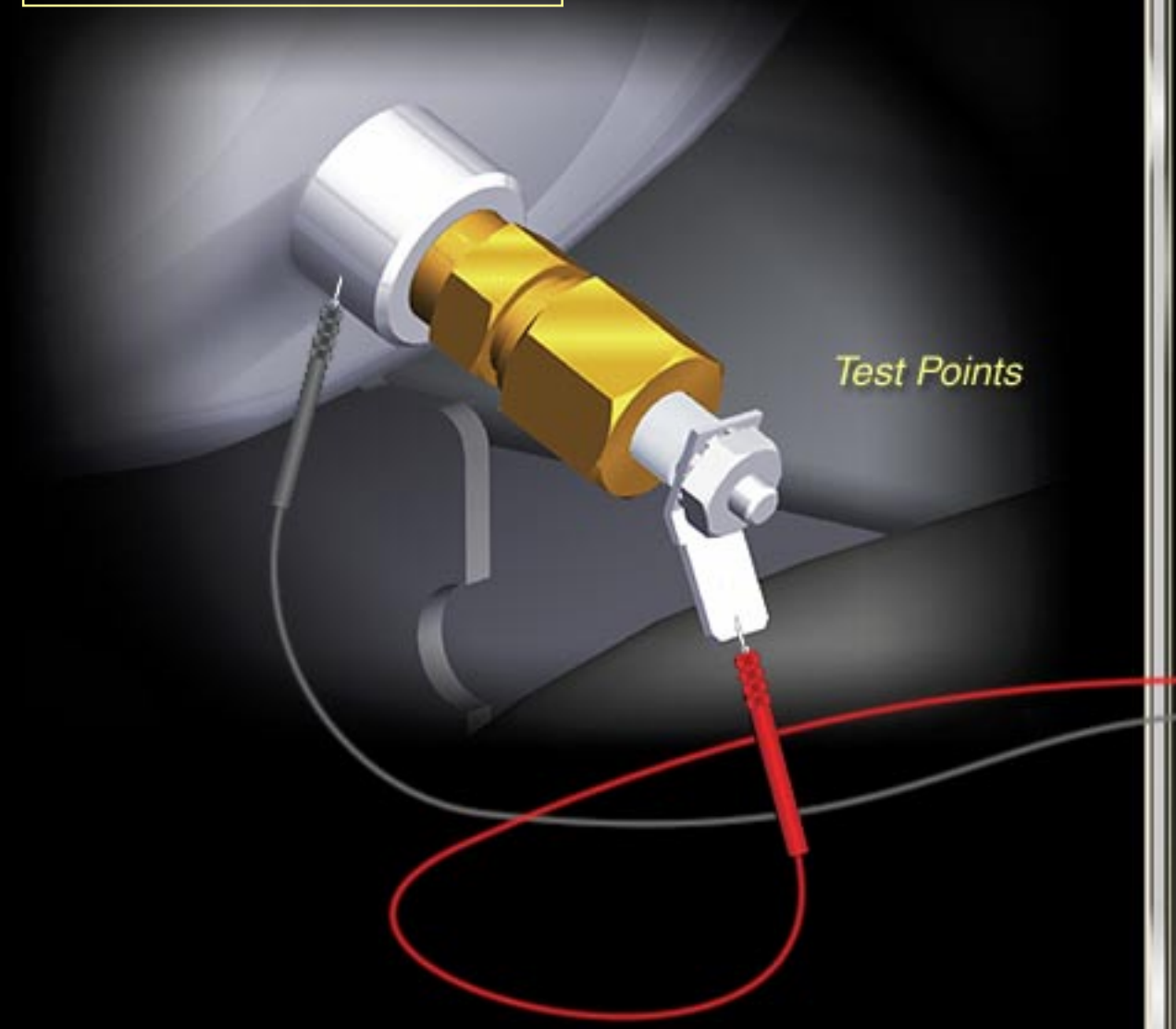
Continuity Test

Components | Print | Back | Next

MIDMARK

Water Level Sensor

Disconnect power to the unit before performing this test.

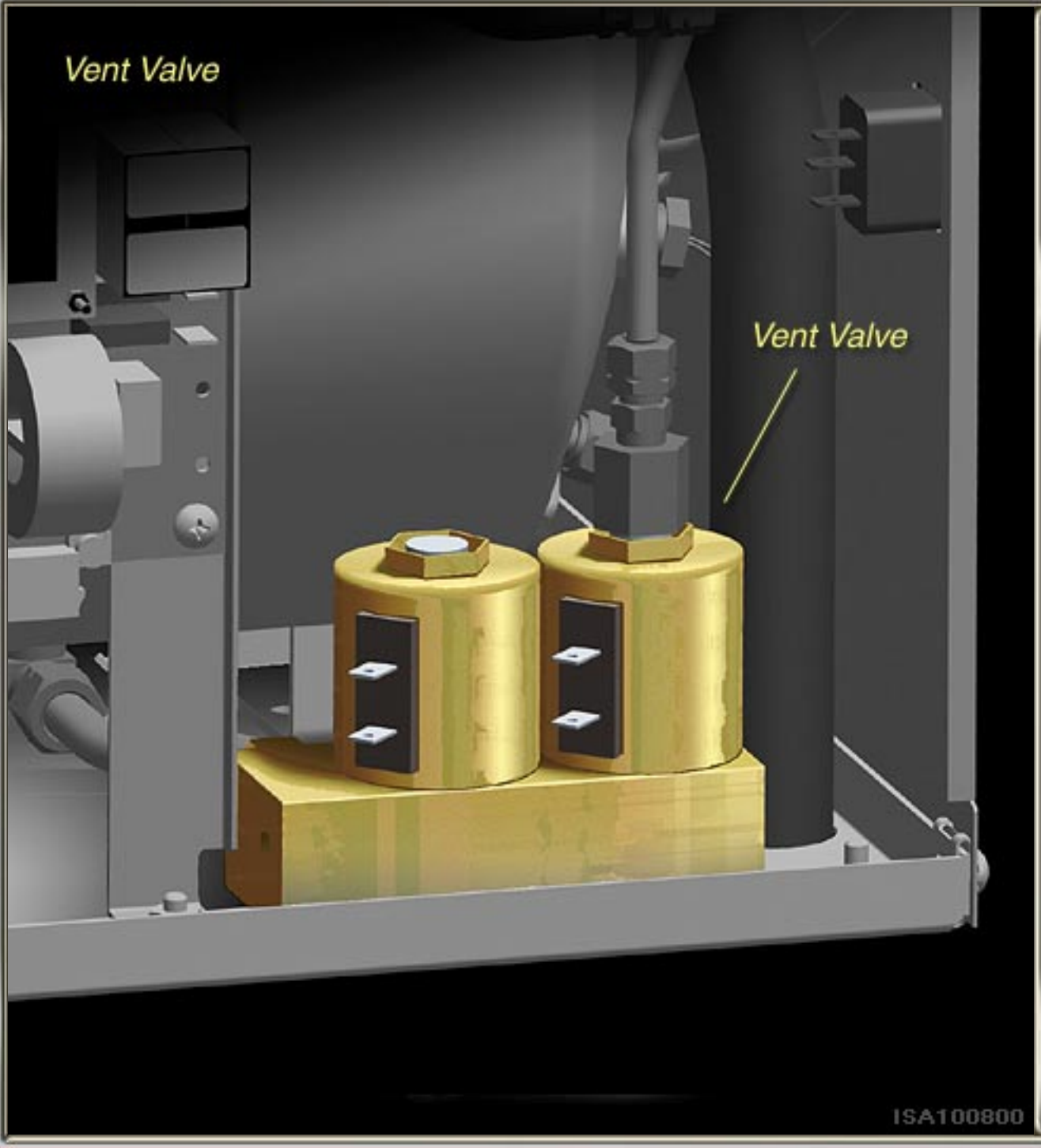


To test the Water Level Sensor...

- **Disconnect the electrical lead from the Water Level Sensor.**
- **Set the multimeter to 2k ohms (Ω).**
- **Place one multimeter probe on the sensor terminal, and the other probe on the chamber wall.**

Acceptable Reading:

MIDMARK



The Vent Valve is located on the right side of the unit. This valve is open until it is energized.

During the Filling, Heat-Up, and Sterilization Modes, the PC board supplies line voltage to the Vent Valve. This closes the valve so that pressure can build in the chamber.

In the Vent Mode, the PC board stops the current flow to the Vent Valve. This opens the valve and releases the pressure from the chamber.

Service Tip

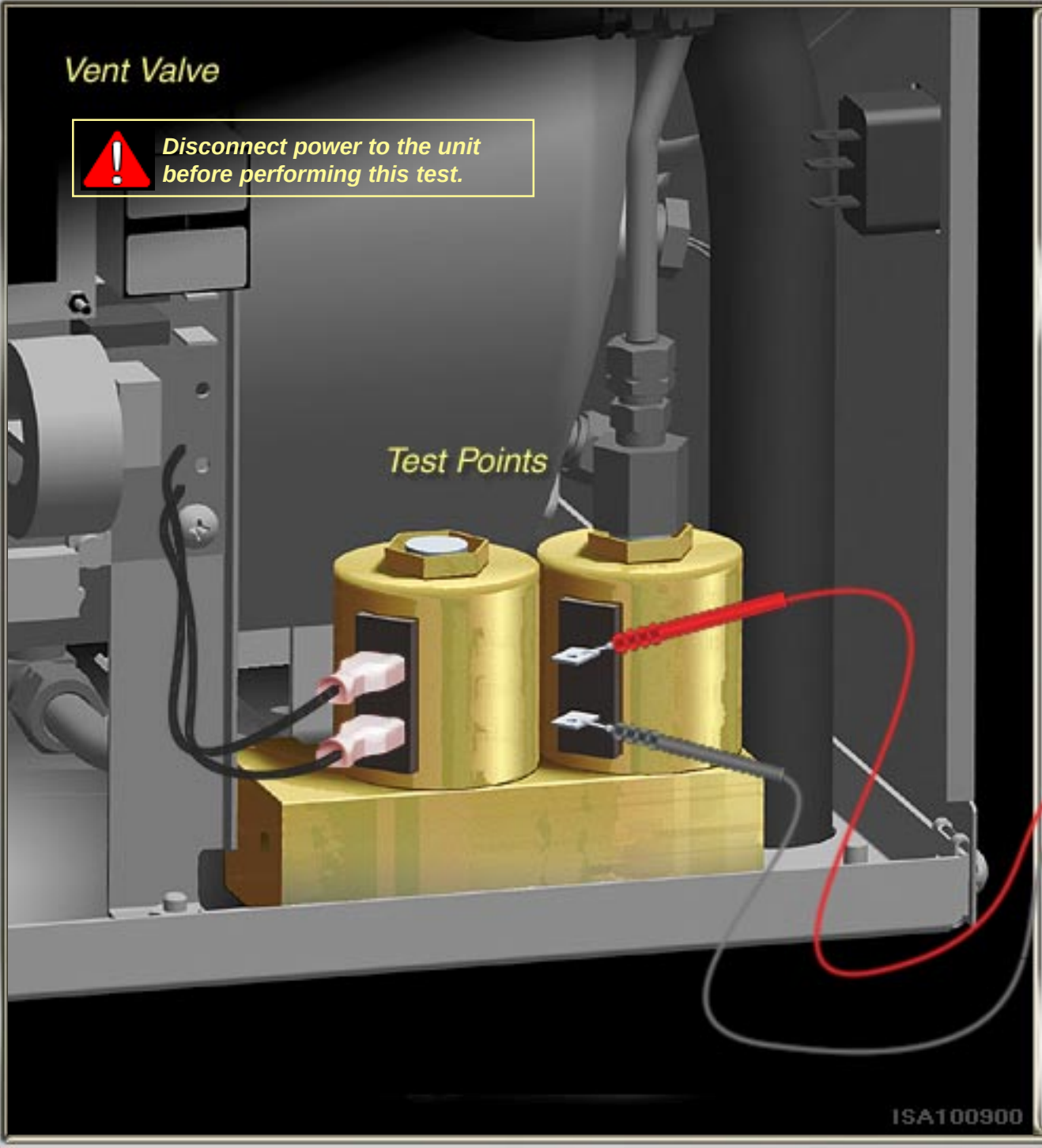
Debris flushed through the system can get trapped in the Vent Valve. This may prevent the valve from opening or closing properly. If a faulty Vent Valve is suspected, disassemble the valve and remove any debris.

[Click button below for resistance test]

Resistance Test

Components | Print | Back | Next

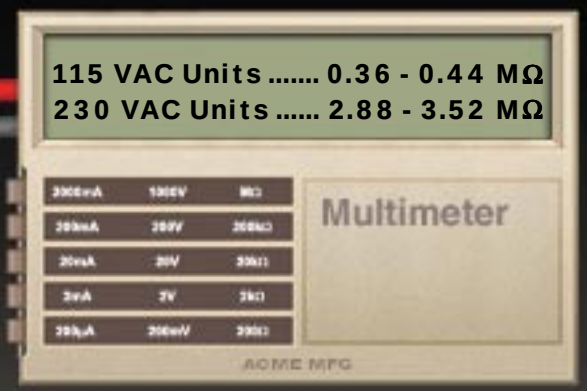
MIDMARK



To test the Vent Valve...

- Disconnect the electrical leads from the Vent Valve.
- Set the multimeter to M ohms (Ω).
- Place the multimeter probes on the Vent Valve terminals.

Acceptable Reading:



Components | Print | Back | Next

MIDMARK

The Fill Valve is located on the right side of the unit. This valve is closed until it is energized.

During the Fill Mode, the PC board supplies line voltage to the Fill Valve. This opens the valve, allowing water to flow into the chamber.

When water reaches the water level sensor inside the pressure vessel, a circuit is completed and current flows back to the PC board. When this voltage is detected, the PC board stops the current flow to the Fill Valve. This closes the valve, stopping the flow of water into the pressure vessel.

Service Tip

Debris trapped in the Fill Valve may prevent the valve from opening or closing properly. If a faulty Fill Valve is suspected, disassemble the valve and remove any debris.

[Click button below for resistance test]

Resistance Test

Fill Valve

Disconnect power to the unit before performing this test.

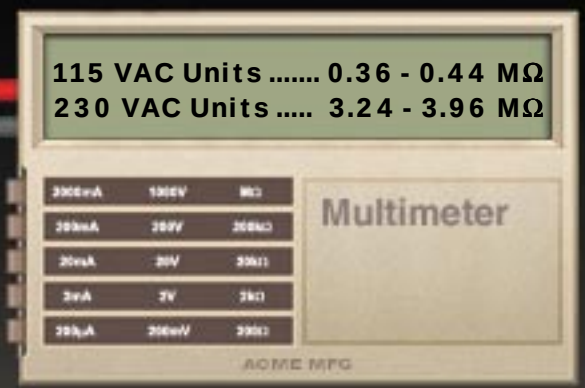
Test Points

ISA101100

To test the Fill Valve...

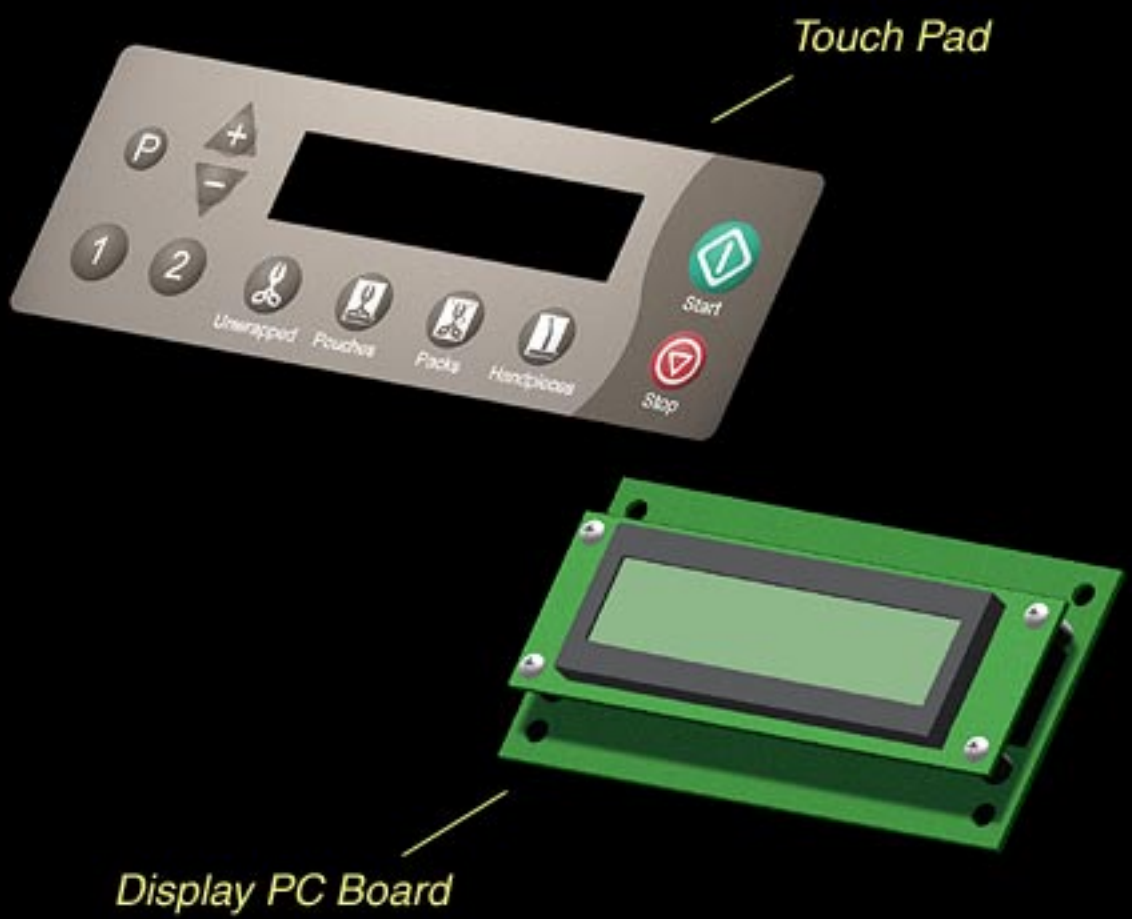
- **Disconnect the electrical leads from the Fill Valve.**
- **Set the multimeter to M ohms (Ω).**
- **Place the multimeter probes on the Fill Valve terminals.**

Acceptable Reading:



MIDMARK

Display



ISA101200

The Touch Pad and Display PC Board are mounted to the top cover at the front of the unit.

When the buttons on the Touch Pad are depressed, the selection is transmitted to the main PC board through the Display PC Board.

As the main PC board initiates the selected function, informational messages appear on the Display PC Board.

MIDMARK

The Door Switch is mounted to the lower latch bracket in the front of the sterilizer.

This switch closes when the door is latched. The PC board continuously monitors the status of the Door Switch during operation. If the door opens during the Fill, Heat-Up, or Sterilization Modes, the PC board detects the open switch and terminates the cycle.

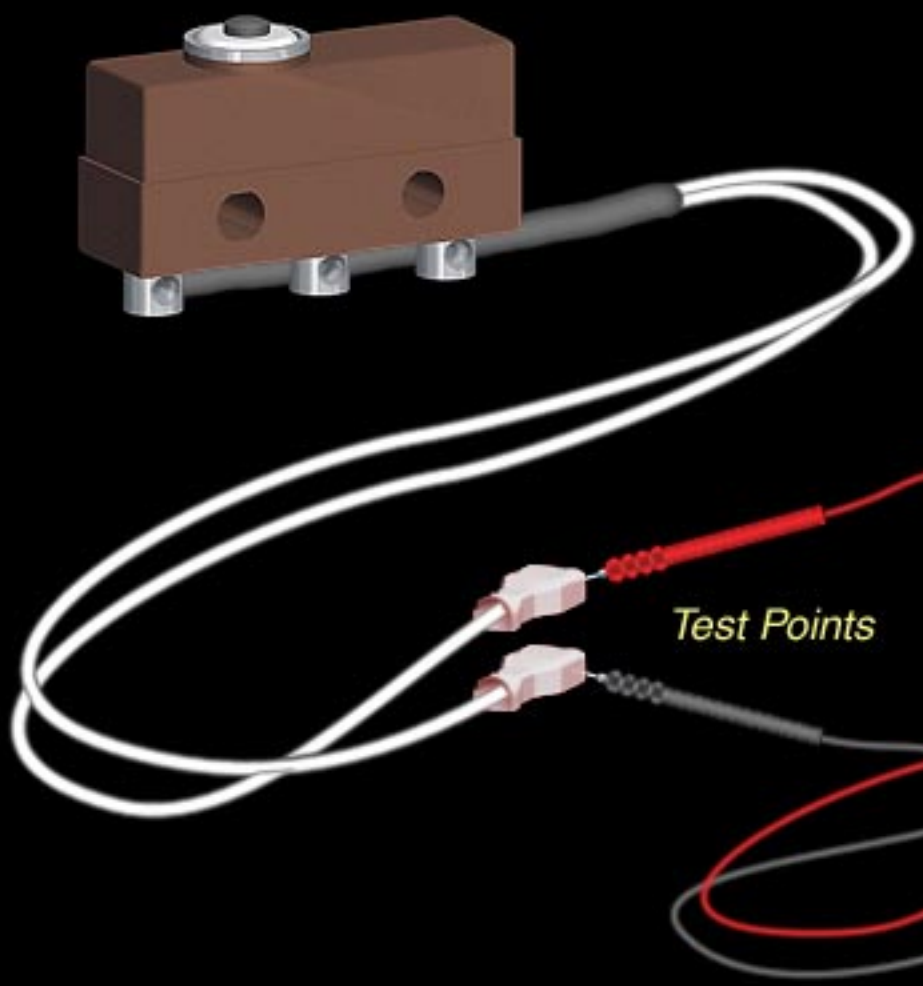
[Click button below for continuity test]

Continuity Test

MIDMARK

Door Switch

Disconnect power to the unit before performing this test.



NOTE
The Door Switch must be tested with the door OPEN and CLOSED.

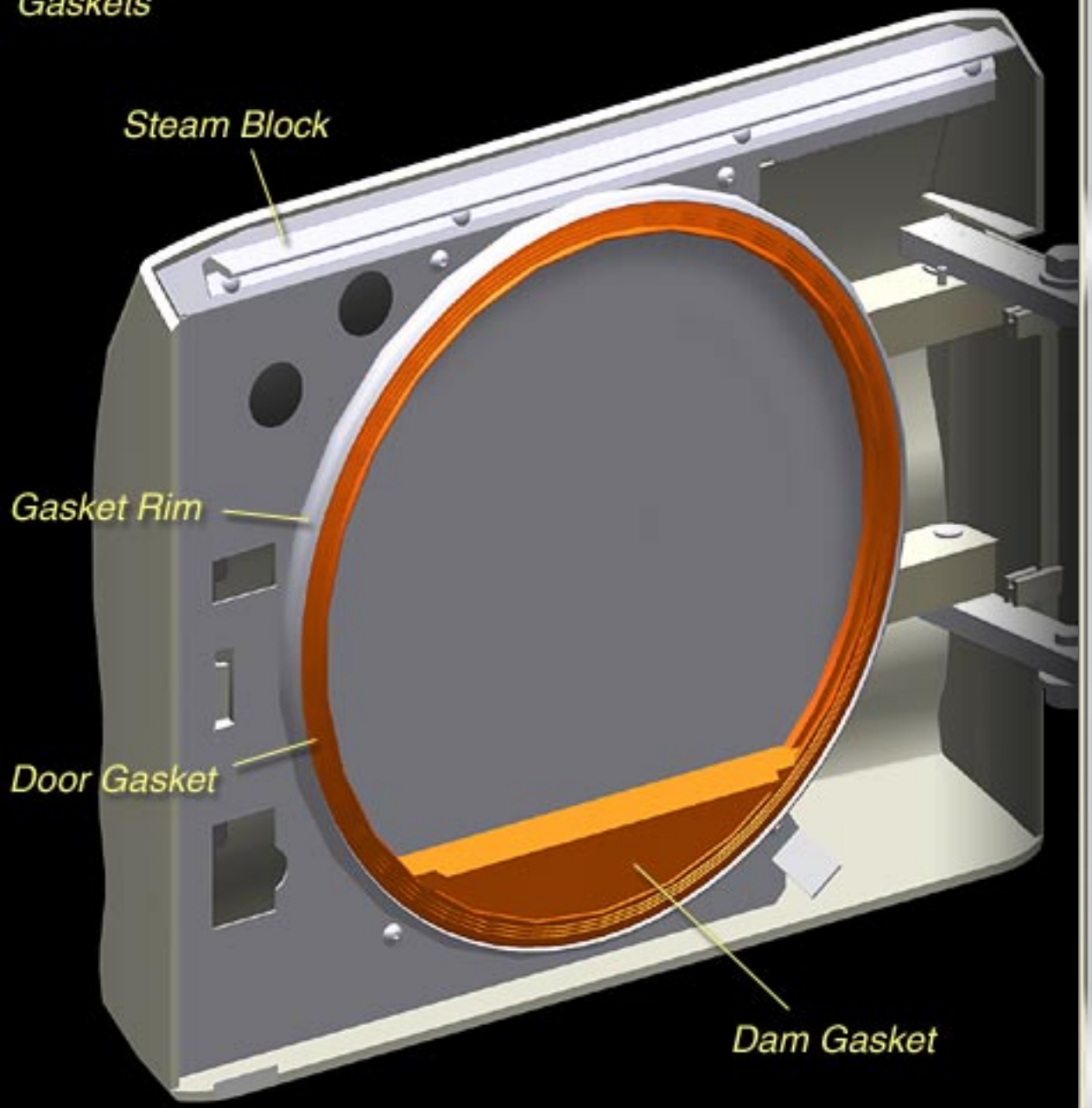
To test the Door Switch...

- **Disconnect two Door Switch wires from the J1 & J2 connectors on the main PC board.**
- **Set the multimeter to 200 ohms (Ω).**
- **Place the multimeter probes on the Door Switch wires.**
- **Open and close the door**

Acceptable Range:

Components | Print | Back | Next

MIDMARK



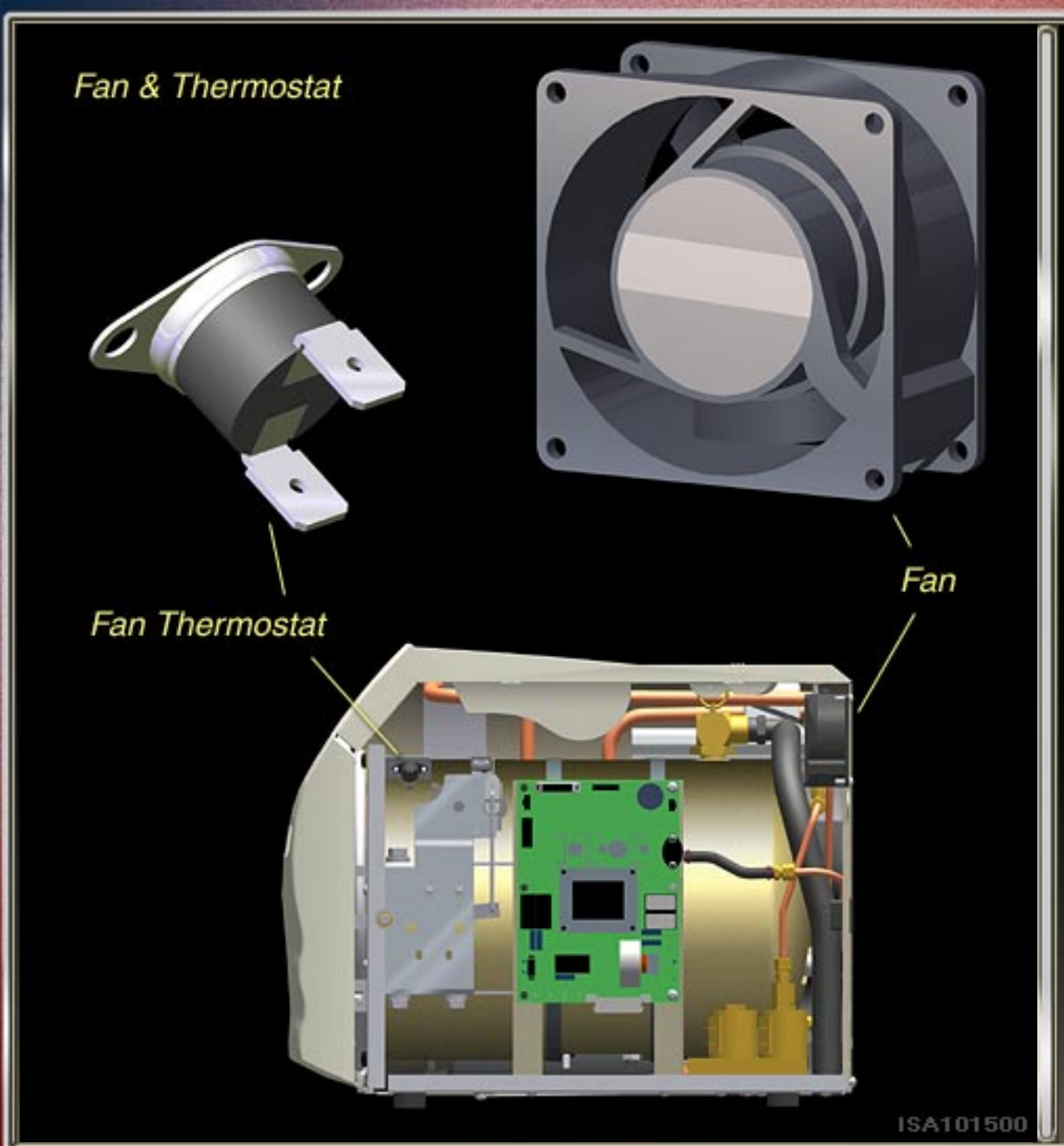
The Door and Dam Gaskets provide a seal between the door and the chamber to prevent water and steam from escaping during operation.

When the door opens at the end of a cycle, steam is released from the pressure vessel. The Steam Block diverts this steam to prevent condensation from collecting on the display PC board.

Service Tip

Debris lodged between the gaskets and the Gasket Rim can allow steam to escape. Remove the Door and Dam Gaskets and inspect them for cuts, cracks, and shrinkage. If no defects are found, wipe the gaskets and the Gasket Rim with a clean cloth, then reinstall the gaskets.

MIDMARK



The Fan is mounted to the back cover of the unit. The Fan Thermostat is mounted to the top of the chamber at the front of the unit.

The purpose of the Fan is to reduce heat inside the enclosure by circulating air between the chamber and the covers.

The ON / OFF function of the Fan is controlled by the Fan Thermostat. When the temperature reaches 130°F ±8° (54°C ±4°), the Fan Thermostat contacts close and current flows to the Fan. This causes the Fan to run.

When the temperature drops to 101°F ±6° (38°C ±3°), the Fan Thermostat contacts open and the Fan stops running.

[Click appropriate button]

Fan

Resistance Test

Fan Thermostat

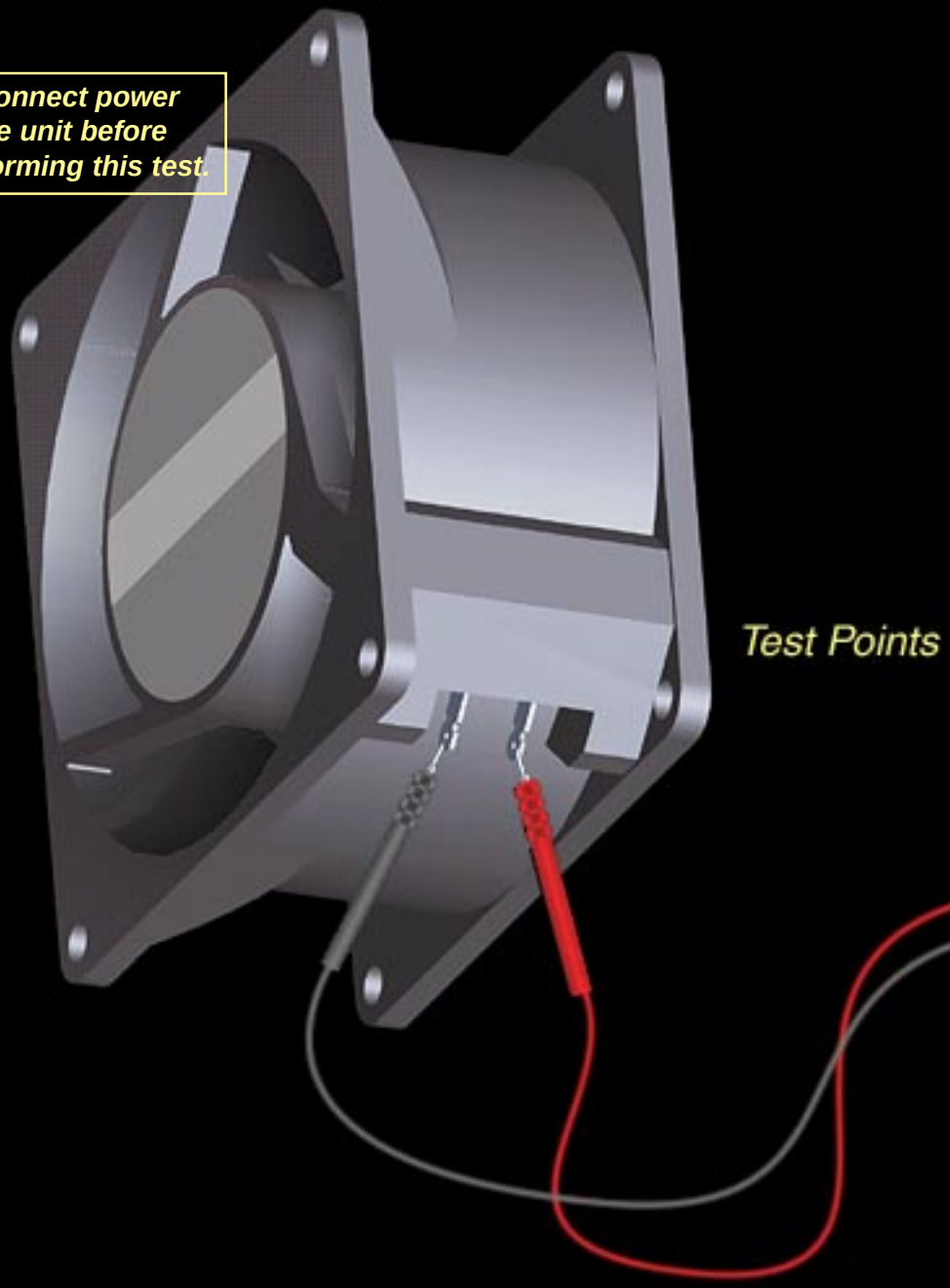
Continuity Test

Components | Print | Back | Next

MIDMARK

Fan

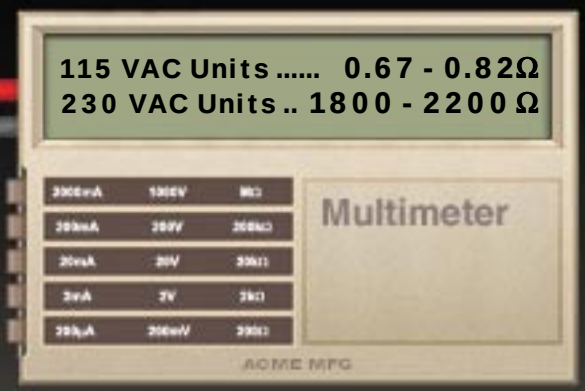
Disconnect power to the unit before performing this test.



To test the Fan...

- Disconnect two wires from the Fan.
- Set the multimeter to:
  115 VAC Units .... 2k ohms (Ω)
  230 VAC Units .... 20k ohms (Ω)
- Place the multimeter probes on the Fan terminals.

Acceptable Range:



Components | Print | Back | Next

MIDMARK

Fan Thermostat

Disconnect power to the unit before performing this test.

ISA101700

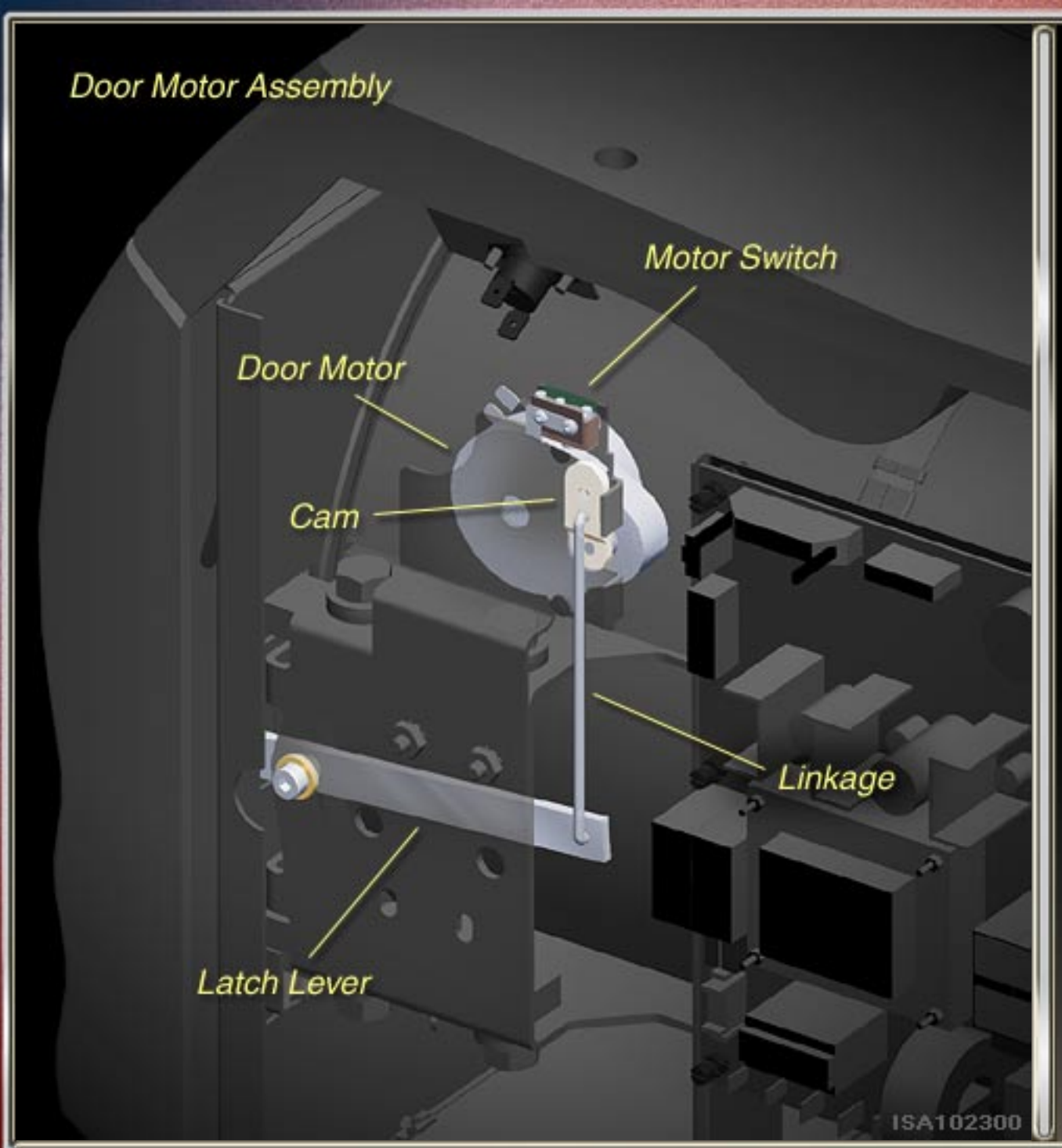
NOTE
The Fan Thermostat must be tested at room temperature.

To test the Fan Thermostat...

- **Disconnect two wires from the Fan Thermostat.**
- **Set the multimeter to 200 ohms (Ω).**
- **Place the multimeter probes on the Fan Thermostat terminals.**

Acceptable Reading:

MIDMARK



The Door Motor Assembly is located on the right side of the unit. This mechanism automatically opens the door after the Vent Mode.

When the pressure in the chamber reaches 0.7 PSI (5 kPa), the PC board bypasses the Motor Switch and energizes the Door Motor. The Door Motor rotates the Cam causing the Motor Switch to close. Now the current to the Door Motor flows through the Motor Switch. As the Cam rotates, the Linkage causes the Latch Lever to open the door.

When the Cam reaches the bottom of its travel, the motor reverses direction. When the Cam reaches its original position, the Motor Switch opens, stopping the current flow to the Door Motor. This causes the motor to stop running.

[Click button below for resistance test]

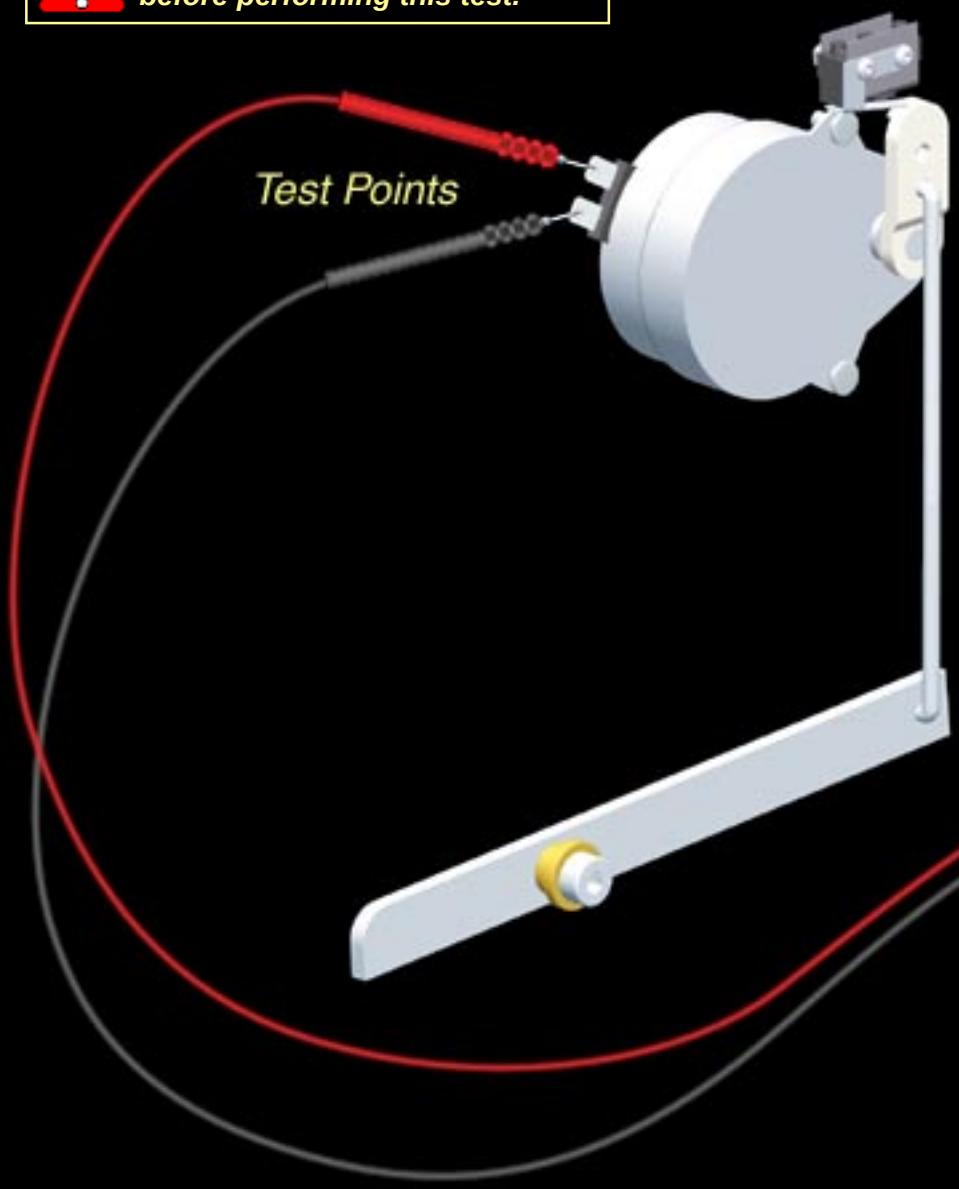
Resistance Test

Components | Print | Back | Next

MIDMARK

Door Motor Assembly

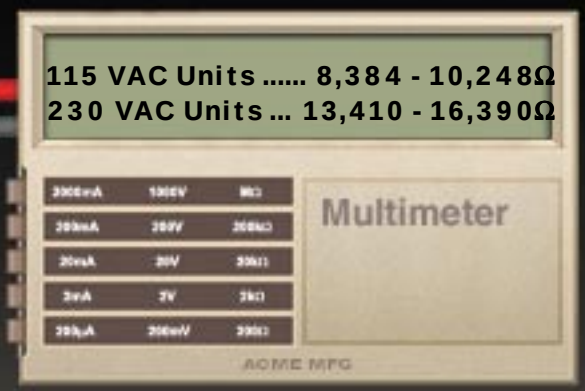
Disconnect power to the unit before performing this test.



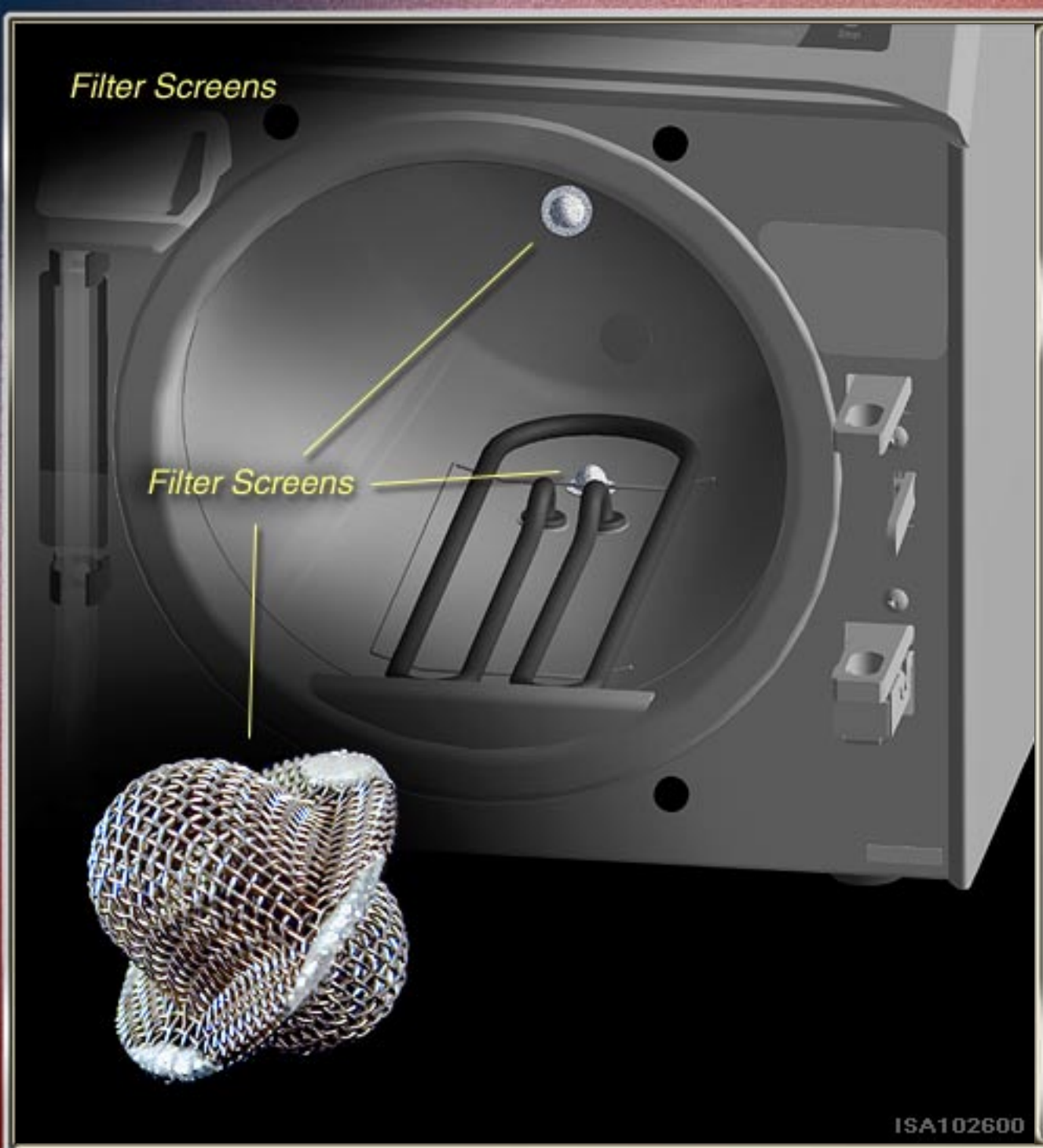
To test the Door Motor...

- **Disconnect two wires from the Door Motor.**
- **Set the multimeter to 20k ohms (Ω).**
- **Place the multimeter probes on the Door Motor terminals.**

Acceptable Range:



MIDMARK



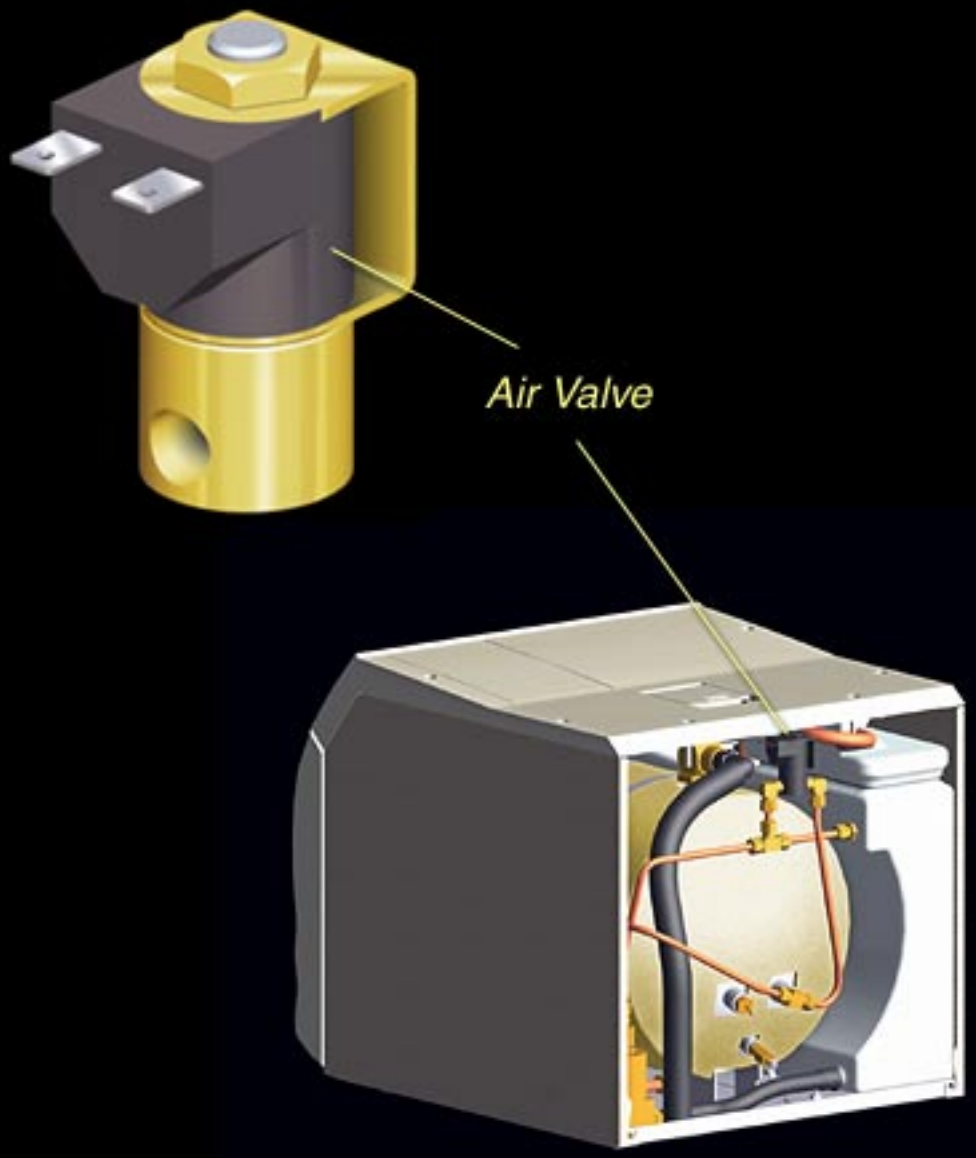
There are two Filter Screens in the pressure vessel. One is located in the back of the chamber and the other in the bottom of the chamber.

These fine mesh screens prevent particles and debris from entering the system.

Service Tip

During the Fill Mode, water flows through the Filter Screen in the bottom of the chamber. If the unit fills slowly, this screen may be clogged. Remove the Filter Screen and clean it with Speedclean and a brush.

MIDMARK



The Air Valve is located in the back of the unit.

During the Fill Mode, the PC board supplies line voltage to the Air Valve. This causes the valve to open so that water can flow into the chamber.

When the Heat-Up Mode begins, the PC board stops the current flow to the Air Valve. This closes the valve. The PC board opens the Air Valve three times during the Heat-Up Mode to release air from the chamber.

During the Sterilization, Vent, and Dry Modes, there is no current flow to the Air Valve. This causes the valve to remain closed.

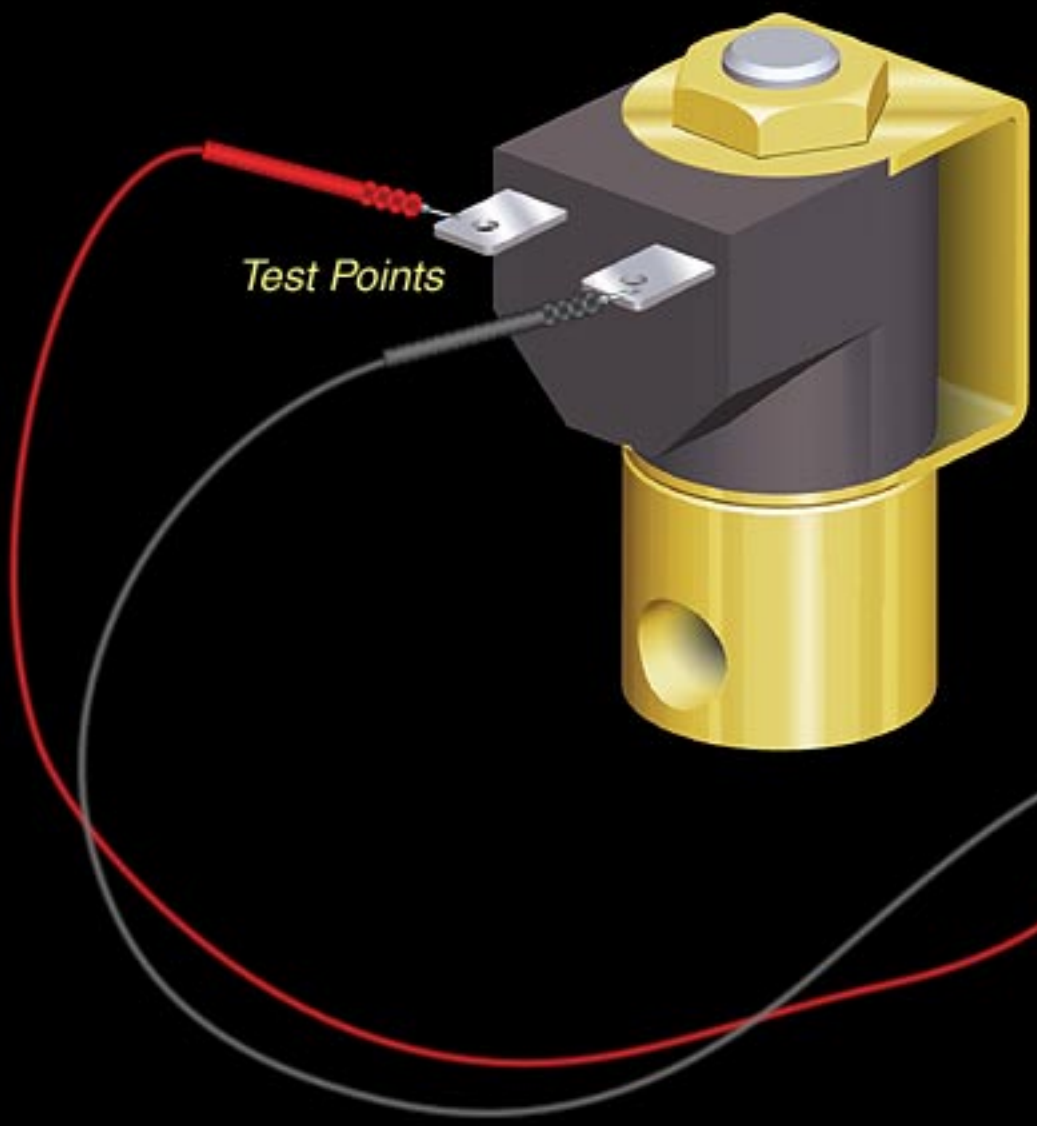
[Click button below for resistance test]

Resistance Test

MIDMARK

Air Valve

Disconnect power to the unit before performing this test.

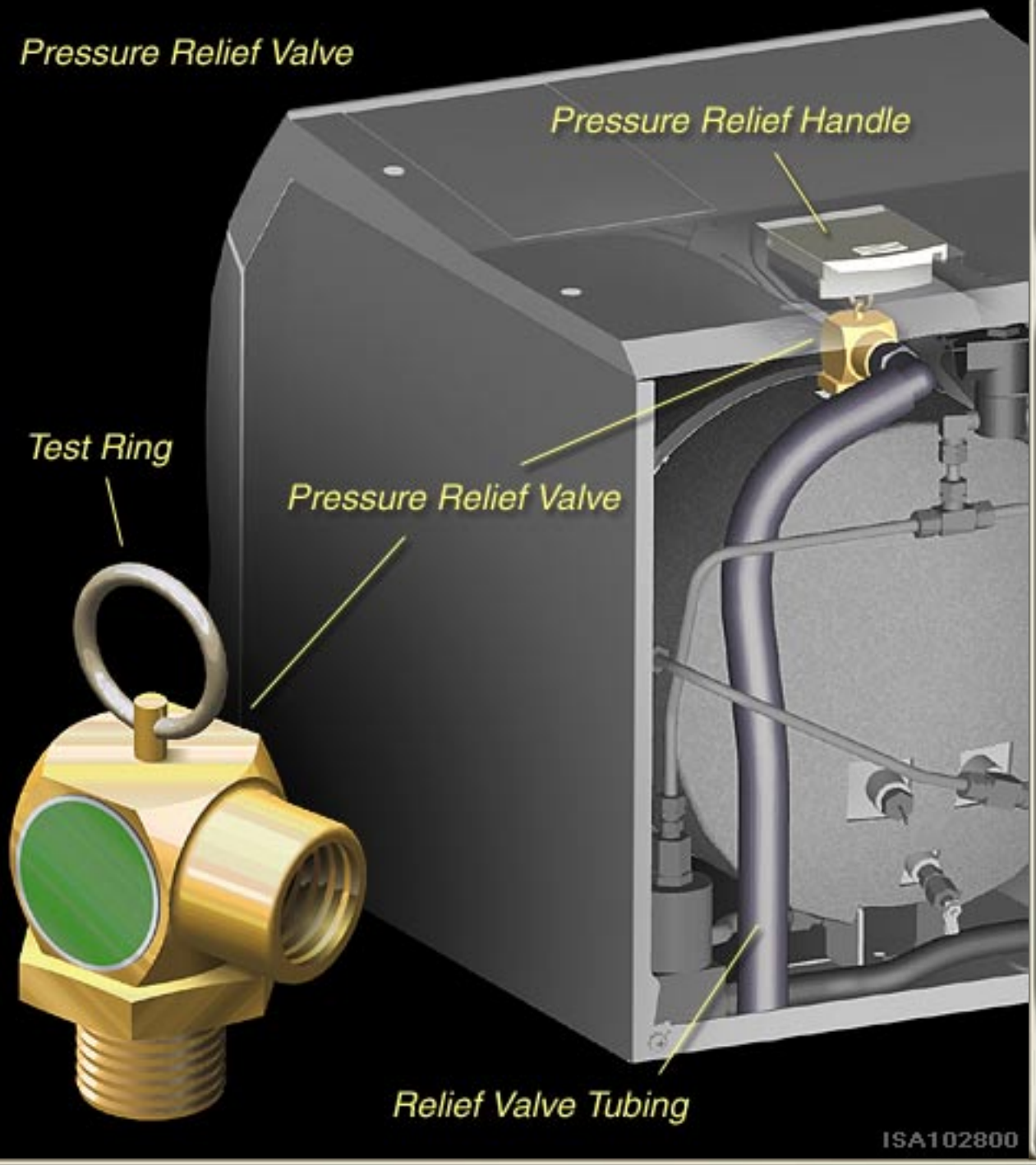


To test the Air Valve...

- Disconnect two wires from the Air Valve.
- Set the multimeter to M ohms (Ω).
- Place the multimeter probes on the Air Valve terminals.

Acceptable Range:

MIDMARK



The Pressure Relief Valve is located in the back of the unit.

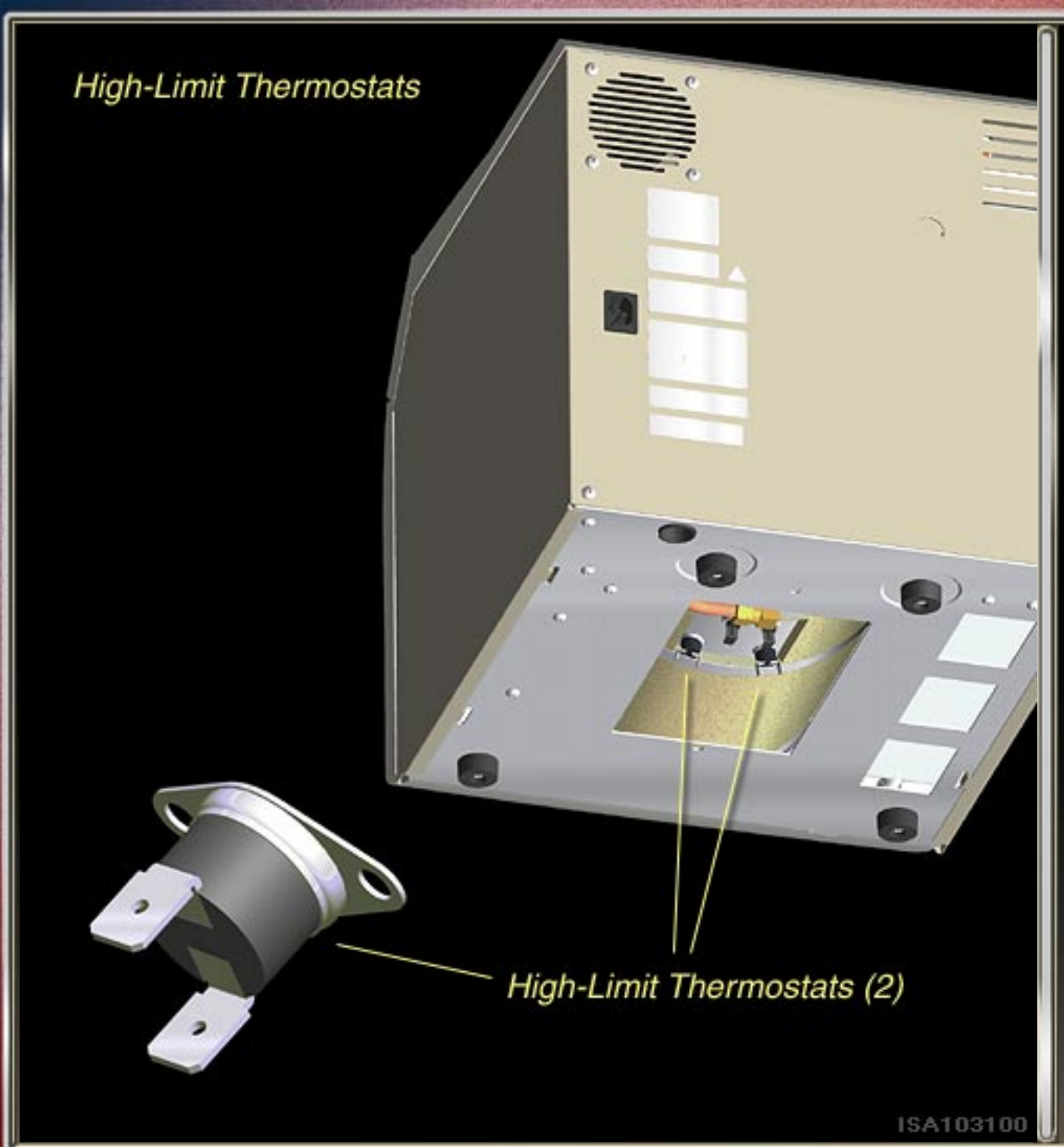
This valve opens if the pressure inside the chamber reaches 40 PSI (275 kPa). When the valve opens, pressurized steam is released from the bottom of the sterilizer through the Relief Valve Tubing.

The valve's Test Ring is attached to the Pressure Relief Handle on top of the unit. The valve can be opened manually by pulling upward on the Pressure Relief Handle.

Service Tip

If the Pressure Relief Valve does not close completely, pull upward on the Pressure Relief Handle, then release it quickly so that the valve snaps closed.

MIDMARK



The two High-Limit Thermostats are mounted to the bottom of the chamber.

Throughout the entire cycle, current flows through the normally closed contacts of the thermostats. This circuit powers all of the line voltage components, except for the Fan.

If the temperature at either of the thermostats exceeds 450°F ±25° (232°C ±14°), the thermostat contacts open. This interrupts power, and the cycle is terminated.

The thermostat contacts reset to the closed position at approximately 325°F (163°C).

[Click button below for continuity test]

Continuity Test

Components | Print | Back | Next

MIDMARK

High-Limit Thermostat

Disconnect power to the unit before performing this test.

ISA103200

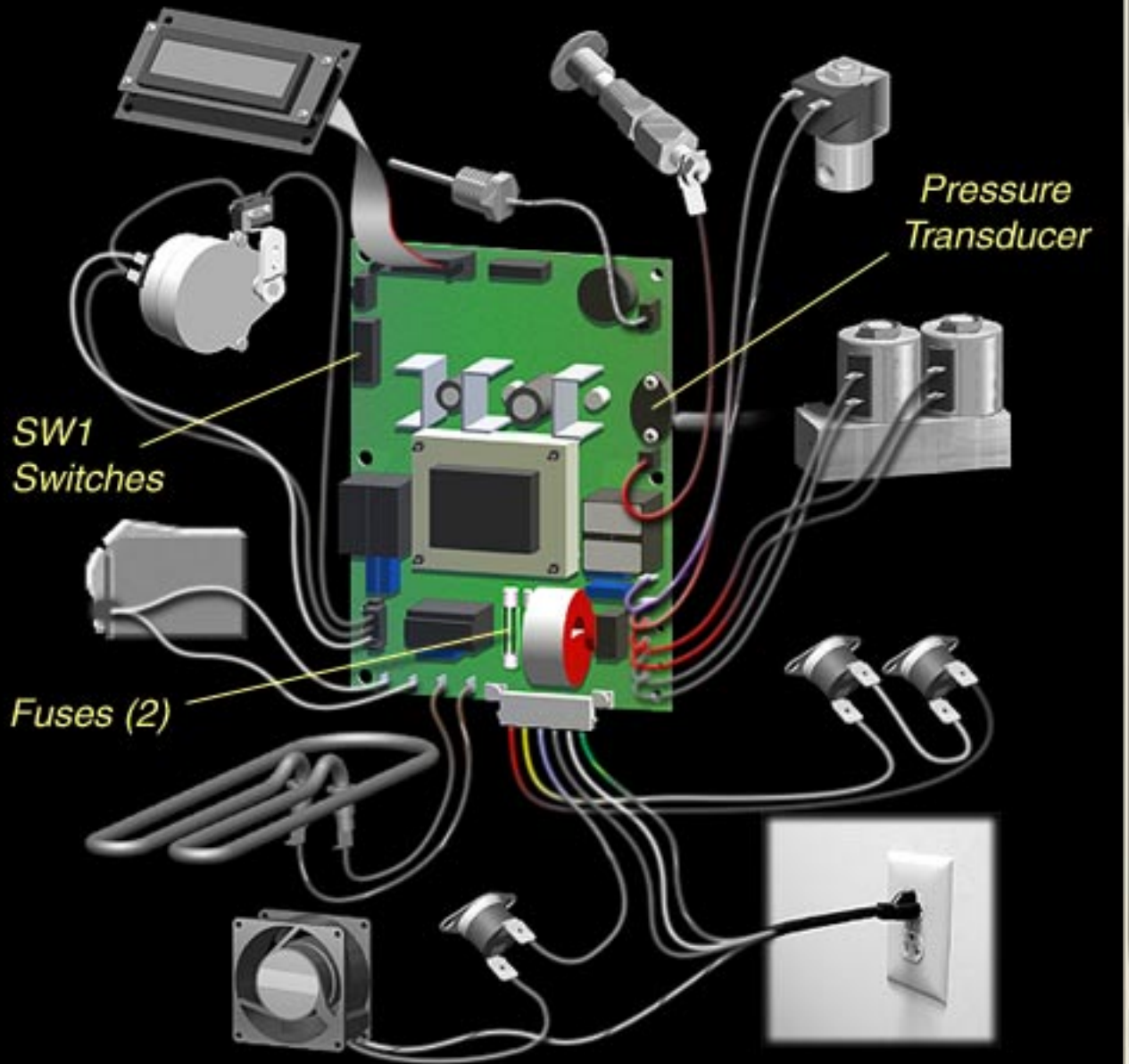
NOTE
The High-Limit Thermostats must be tested at room temperature.

To test the High-Limit Thermostats...

- **Disconnect two wires from the thermostat.**
- **Set the multimeter to 200 ohms (Ω).**
- **Place the multimeter probes on the thermostat terminals.**

Acceptable Reading:

MIDMARK



The Main PC Board controls all of the electronic components of the sterilizer. During operation, the Pressure Transducer monitors the chamber conditions to maintain the parameters for the selected cycle.

The two Fuses on the PC board (F1 and F2) protect the circuitry from excessive current draw. If either Fuse is faulty, the unit will not operate.

The SW1 Switches can be used for service diagnostic and to adjust the display to metric units.

[Click on appropriate button]

Temperature Sensor Voltage
Test Points

Water Level Sensor Voltage
Test Points

Printer Voltage
Test Points

SW 1 Switches
Settings

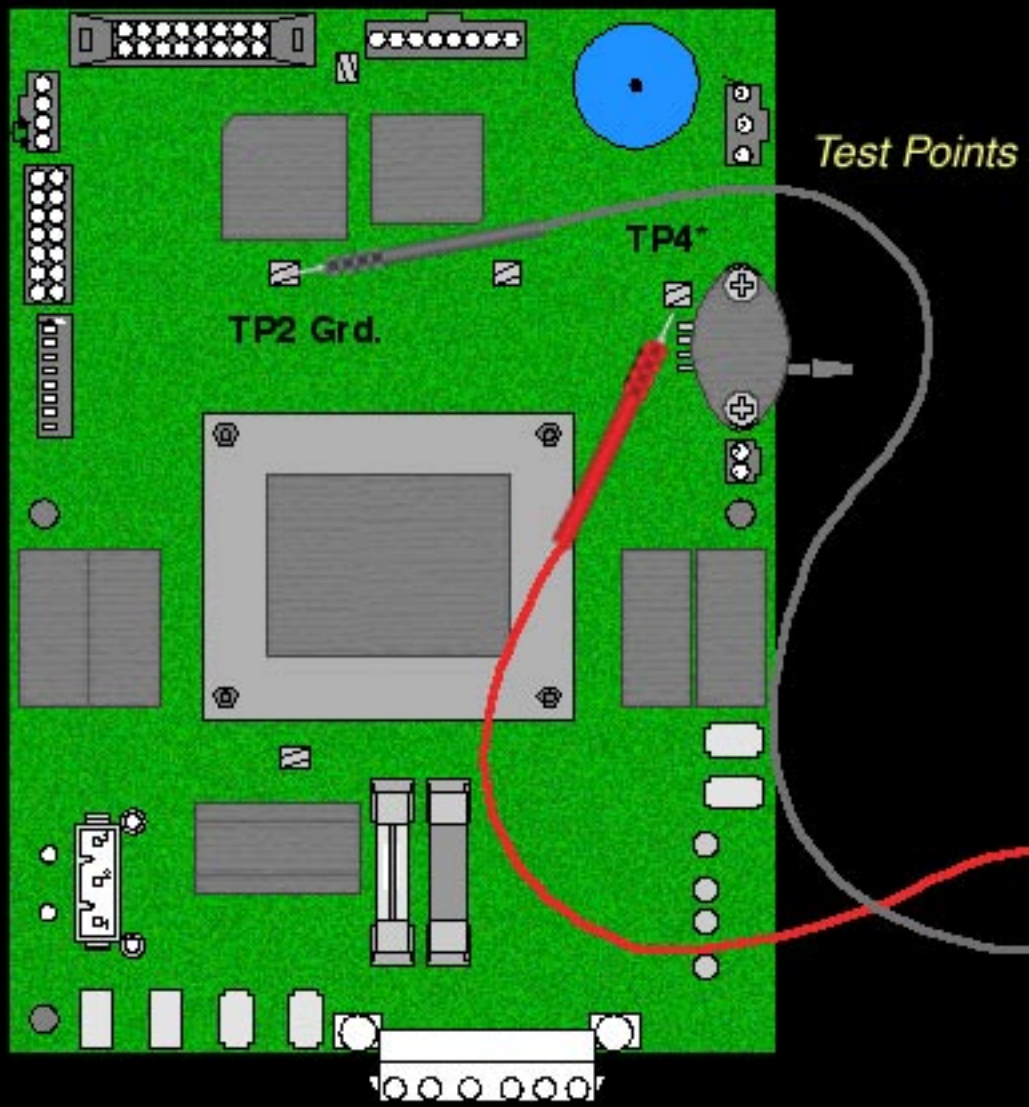
PC Board Relays
Test Points

Wiring Diagram

Components | Print | Error Codes | Back

MIDMARK

Temperature Sensor Voltage Test



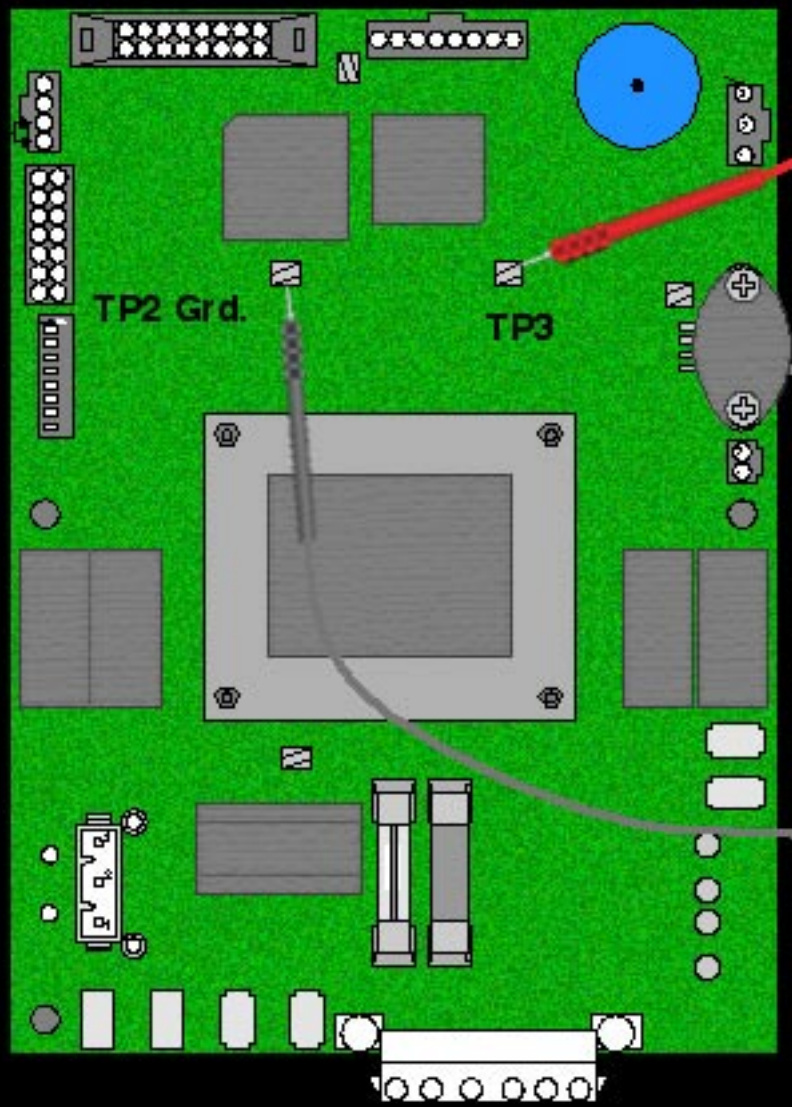
To test for proper voltage supply to the Temperature Sensor...

- **Set the multimeter to 20 VDC.**
- **Place the black multimeter probe on TP2.**
- **Place the red multimeter probe on TP4.**

Acceptable Range:

MIDMARK

Water Level Sensor Voltage Test



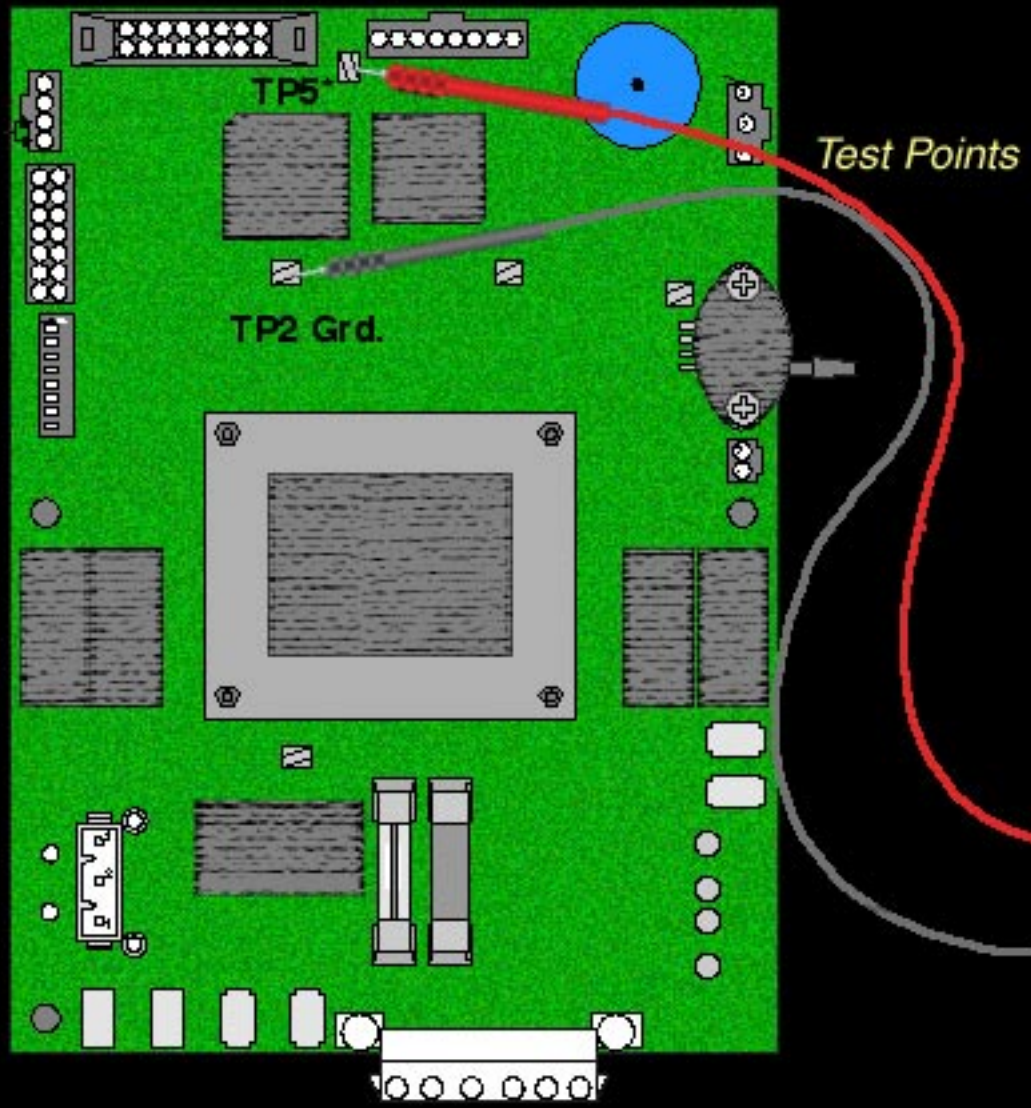
To test for proper voltage supply to the Water Level Sensor...

- **Set the multimeter to 20 VDC.**
- **Place the black multimeter probe on TP2.**
- **Place the red multimeter probe on TP3.**

Acceptable Range:

MIDMARK

Printer Voltage Test



To test for proper voltage supply to the (optional) Printer...

- **Set the multimeter to 20 VDC.**
- **Place the black multimeter probe on TP2.**
- **Place the red multimeter probe on TP5.**

Acceptable Range:

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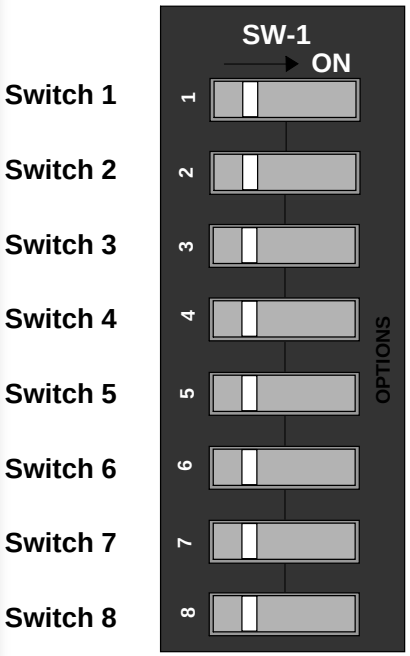

Switch Positions

Switch 1	Turn ON for Service Diagnostics Mode
Switch 2	Not Used, leave OFF
Switch 3	Not Used, leave OFF
Switch 4	Not Used, leave OFF
Switch 5	Not Used, leave OFF
Switch 6	Not Used, leave OFF
Switch 7	OFF - English Units ON - Metric Units
Switch 8	Not Used, leave OFF

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The eight SW1 Switches are all set to the OFF position when shipped from the factory. These switches should only be used to change the display to metric units (Celcius / kPa), or to use the Service Diagnostic Mode.

To change the temperature and pressure display to metric units (Celcius / kPa), move Switch 7 to the ON position.

To use the Service Diagnostics Mode, move Switch 1 to the ON position. This switch must be turned OFF before resuming normal operation.

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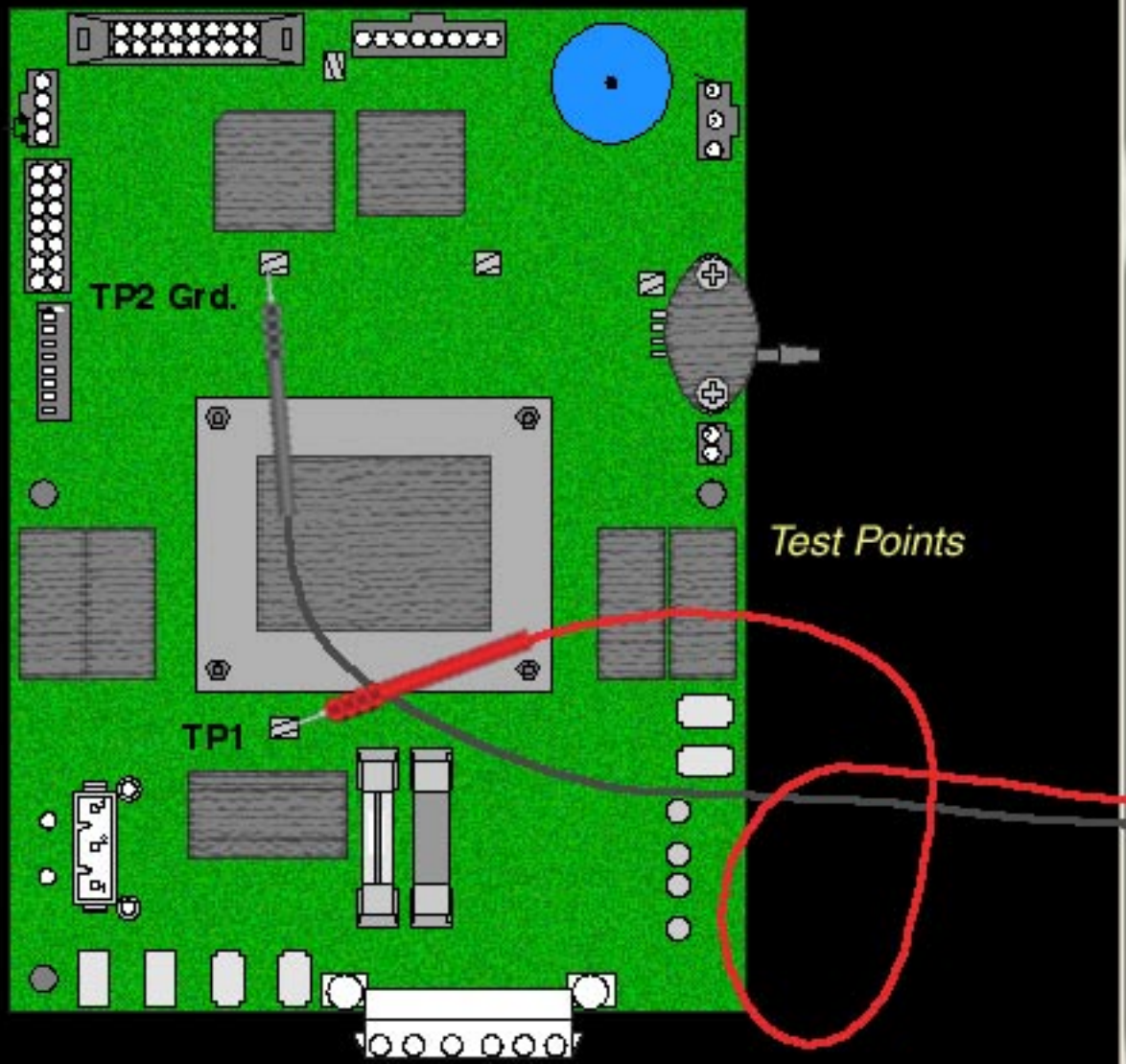
PC Board Relay Test



To test for proper voltage supply to the PC board relays (Heating Element, Door Motor, Fill / Vent, & Air Valves)...

- **Set the multimeter to 20 VDC.**
- **Place the black multimeter probe on TP2.**
- **Place the red multimeter probe on TP1.**

Acceptable Range:

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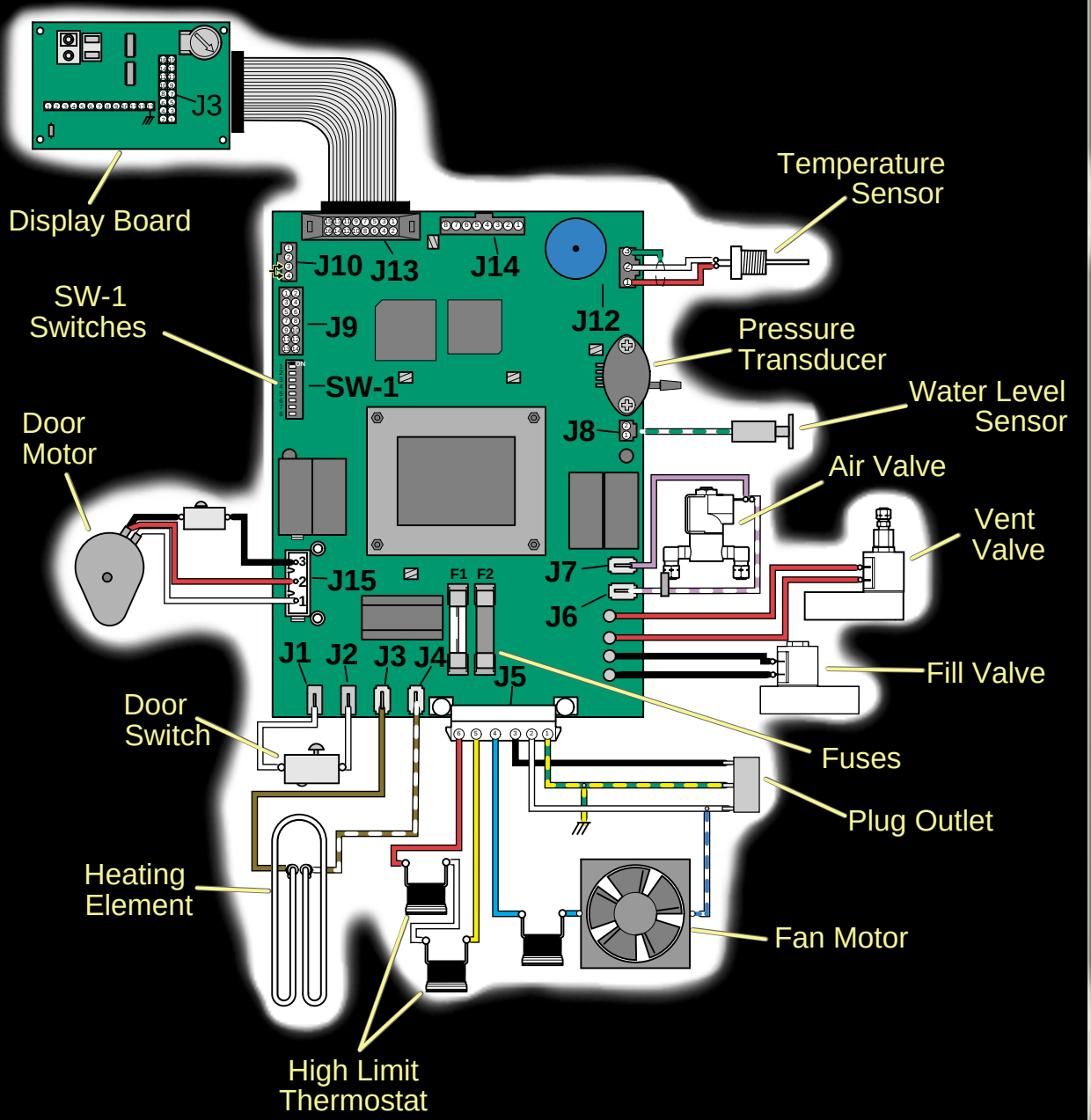
PC Board Wiring Diagram



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Error Code Reference Table

First Digit=Component	Second Digit=Problem	Third Digit=Mode
0=General System	0 (not used)	0=Power-Up
1=Stop Button	1=Power Loss	1=Select Cycle
2=Water Level Sensor	2=Closed	2=Fill
3=Door Switch	3=Low	3=Heat-Up
4 (not used)	4=High	4=Sterilizing
5=Temperature Sensor	5 (not used)	5=Vent
6=Pressure Sensor	6=Hardware	6="Door To Open"
7 (not used)	7=Over Limit	7=Dry
8 (not used)	8=Open	8 (not used)
9=High-Limit Thermostat(s)	9 (not used)	9 (not used)

Use this table to cross-reference the numeric error code with the *Component*, *Problem*, and *Mode* in which the error occurred.

Refer to Section II in the service manual for troubleshooting information.

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